JUNE 1953

American Engineer

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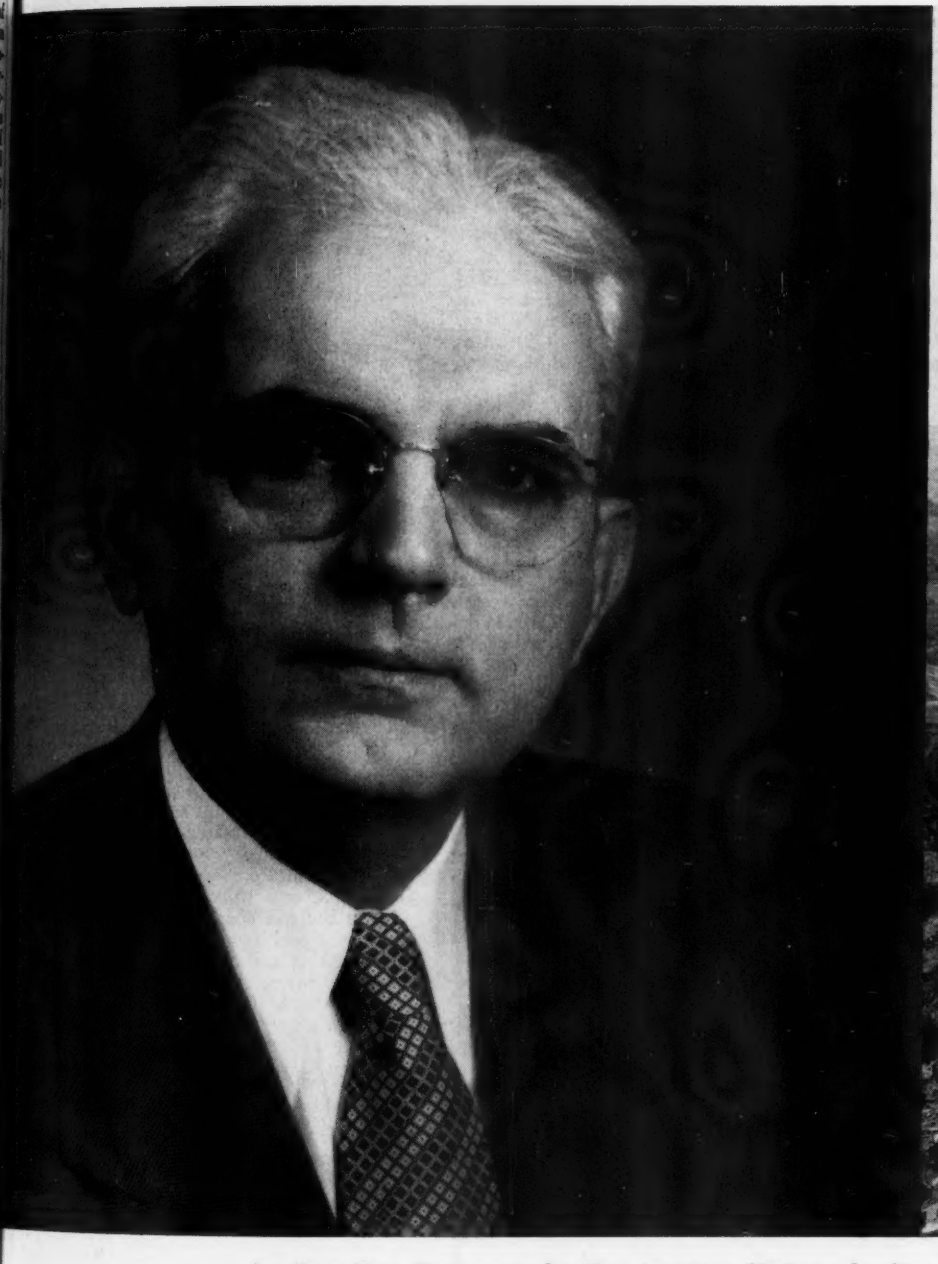
IN THIS ISSUE . . .

● **COMING TRUE—AN ENGINEER'S DREAM**

By Spessard L. Holland,
United States Senator from Florida



An Up-to-Date Report on the Pan American Highway by Senator Holland

. . . *Also*

Harry A. Kuljian: Engineer and Cosmopolite

●

We Must Keep Our Teachers —By the President of The Cooper Union—

●

Ohio Engineers and Architects Work Together

Attend the Annual Meeting, Daytona Beach, Fla., June 18-20

. . . NEW LITERATURE . . .

To help the offering firms determine which literature you require, when requesting an item, be sure to list all specifications shown . . . and say you saw it in the AMERICAN ENGINEER.

HERRINGBONE GEAR DRIVES—A new 36-page Book No. 2519 on herringbone gear drives has just been published by Link-Belt Company. It offers detailed information about Link-Belt single, double and triple reduction enclosed herringbone gear drives.

Herringbone gear drives are widely used to transmit power at required speeds to conveyors, line shafts, blowers, pumps, agitators, hoists, machine tools, processing machines and other industrial equipment. Installation photographs in Book 2519 show examples of these drives in many types of heavy duty service.

Standardized packaged drives, with motor, baseplate, geared coupling and single, double or triple herringbone gear drive, are listed with dimensions and NEMA motor frame numbers.

Book 2519 will be sent on request. Link-Belt Company, 307 N. Michigan Ave., Chicago 1, Ill.

—AE—

AIR FILTER — Bulletin No. 1505-1, describing and illustrating construction and function of the MSA "Ultra-Aire Space Filter," has just been issued by Mine Safety Appliances Co., Braddock, Thomas and Meade Sts., Pittsburgh 8, Pa. Two primary fields of use—product and process control, and health protection—are listed, including protection against inert and radioactive dusts, in film manufacture and processing; during processing of foods, textiles, pharmaceuticals, delicate instruments, lenses, mirror-silvering, paints, gases, plastics, electrical and electronic equipment; and as a health safeguard for radio isotope users, hospitals, atomic energy plants, bomb shelters, bacterial warfare operations, and wherever employees may work with beryllium, aniline dyes, steel, chemicals, or other toxic materials.

—AE—

NEW "PLASTIMENT" BOOKLET—The theory and practice of obtaining a good concrete is the subject of a new booklet, "Plastiment Concrete Densifier," published by Sika Chemical Corporation, of Passaic, New Jersey. Beginning with the gel mechanics of cement-water reaction, the booklet discusses the factors affecting cement hydration and basic quality of concrete, and how these factors can be controlled to reduce cracking and increase concrete hardness and impermeability. The booklet overs 8 pages of engineering information, illustrated with drawings, tests, photographs and descriptions of outstanding engineering projects constructed with Plastiment concrete.

—AE—

WATER SUPPLY BROCHURE—" 'There's No Place Like Home' with lots of water," according to The F. E. Myers & Bro. Co., in its new illustrated consumer brochure of the same name.

This 12-page attractive three-color brochure covers Myers complete line of water supply equipment, including water systems, pumps and water conditioning equipment. The booklet shows how the right selection of water supply equipment can bring better living to the city and suburban home and on the farm.

The free booklet can be obtained from your nearest Myers dealer or by writing: The F. E. Myers & Bro. Co., 903 So. Orange Street, Ashland, Ohio.

NEW BOOK ON OFFICE PHOTOCOPYING—The American Photocopy Equipment Company of Chicago has just completed publication of a new book, "The Apeco Systematic Auto-Stat Story," that tells of all the advantages of modern photocopying equipment in today's complex business operations.

This book is a complete factual report on the Apeco Systematic Auto-Stat with detailed information on the equipment, including how it operates, its uses in everyday business procedure and it also contains illustrated charts that show the savings in time and money possible with this equipment.

The Apeco Systematic Auto-Stat story is a book that every business executive and methods expert should read. Copies are being offered by the manufacturer of the Apeco Systematic Auto-Stat, the American Photocopy Equipment, Co., 2849 N. Clark St., Chicago 14, Ill.

—AE—

COMPRESSED AIR CONDENSIFILTER—Instrument-Quality air for all compressed air applications is now available from ordinary plant air. Described in an illustrated bulletin covering construction features; such as the disposable filter cartridge, technical data and dimensions of the Hankison Model B-30-D Condensifilter. Includes applications and recommended usage. Hankison Corporation, 109 Biltmore Building, 951 Banksville Road, Pittsburgh 16, Pa.

—AE—

BUS DUCT BOOKLET—Bus duct application to distribution systems of commercial, institutional, and industrial buildings is described in a 12-page booklet available from Westinghouse.

Four types of bus duct are described: (1) plug-in duct—provides outlets every 12 inches; (2) low-impedance duct—for long feeder runs or where minimum voltage drop is important; (3) weatherproof feeder duct—for outdoor installations; (4) weatherproof low-impedance duct.

Photographs and application data from actual installations show how bus duct solves distribution problems connected with modernization, expansion, or new building programs.

For further information, write Westinghouse Electric Corporation, P. O. Box 2099, Pittsburgh 30, Pa.

—AE—

GREASE INTERCEPTORS—A technical guide of the proper sizing and selection of grease interceptors has just been published by the J. A. Zurn Mfg. Co., Erie, Pa. This Zurn Technical Bulletin 6-52 (A.I.A. File No. 29c4) lists four reasons for construction engineers and contractors as to why effective grease interception saves time and money for users such as hotels, large cafeterias, food processing plants, ship galleys and other installations where accumulations of grease may present problems. Text and detailed charts describe how capacity of grease interceptors is determined. Advantages of flow control fittings, for use wherever overload conditions can occur, are explained. A simple checklist for determining types of greaseptors to be used in various installations makes it easy to quickly select the greaseptor most suitable for any given installation. Copies of Zurn Technical Bulletin No. 6-52 are available from J. A. Zurn Mfg. Co., Erie, Pa.

AUTOMATIC ENGINE STOP VALVE—A new 6-page bulletin describing the Golden-Anderson "cushioned" automatic engine stop valve is now available from Golden-Anderson Valve Specialty Co., Pittsburgh, Pa.

Featured in this bulletin are the application, fabrication, installation and design along with a complete parts list, dimensions for all sizes and complete specifications.

Copies of this new Bulletin S-3 are available from Golden-Anderson Valve Specialty Co., 2097 Keenan Bldg., Pittsburgh 22, Pa.

—AE—

ELECTRICAL CONNECTORS — A new 12-page bulletin number 3-4-1 on the AiResearch Williamsgrip electrical connectors is now available from AiResearch Manufacturing Company of Los Angeles.

The Williamsgrip quick disconnect design develops a positive pressure contact by means of a special thread. Its self wiping action not only eliminates arcing and excessive heating, but allows the connector to operate from 5 to 25 degrees Fahrenheit cooler than the cable, even under conditions of 100 per cent overload. This positive contact also reduces corrosive action. Designed for a wide range of wire sizes.

The new bulletin covers the Williamsgrip connectors completely, giving a full description of their operation, performance, applications and dimensions. Photographs, schematics, exploded views and graphs add further details to this two color brochure. Address: AiResearch Manufacturing Company, Los Angeles, California.

—AE—

NEW SPEEDMASTER MODEL "S" WHITEPRINTER—An informative Bulletin 52S12 on the new Versa-Liner SPEEDMASTER Model "S" Ammonia-Type Whiteprinter has been issued by Peck & Harvey, Chicago, manufacturers of whiteprint, blueprint and photocopy equipment.

This helpful Bulletin points out the new improved features that make the Model "S" the first new medium-priced volume-production ammonia-type whiteprinter in years —features that provide faster, more efficient operation, at economical cost.

The Bulletin covers many important performance and operating details that facilitate making whiteprints in plant or office, from cut sheets or roll stock up to 42" wide in any length.

For a copy of Bulletin 52S12, write to Peck & Harvey, 5650 N. Western Ave., Chicago 45, Illinois.

—AE—

NEW REINFORCING MESH—Adrian Peerless, Inc. of Adrian, Michigan, manufacturers of Wal-Lok, masonry reinforcing mesh, announce a new folder for use by engineers, architects, and builders and several important improvements in its product. Fabricated entirely of 100,000 psi. tensile strength cold drawn steel wire, new Wal-Lok is now deformed and knurled; #9 ga. cross bars are deep welded and project beyond 3/16" dia. longitudinal rods. Wal-Lok is manufactured in 12' lengths in sizes for 4", 6", 8", 10", and 12" nominal wall thicknesses. Data and recommended mesh specifications are included in the new Wal-Lok folder. Write 1429 E. Michigan Street, Adrian, Michigan.

Letters

Nationalization? . . .

Dear Editor:

I note your article in the April issue, "Are You Ready for Seven (b) Day?" In this article, you seem to favor the nationalization of atomic power. The writer is a government man and, therefore, he would.

I am very jealous of my American inheritance. I want no part in any nationalization experiment. We have come far under the system of private enterprise. There is no reason to think that we cannot go equally far under the same principles.

I have just returned from a trip to Australia and New Zealand, where nationalization is carried to the extreme. I want no part of it. Each individual to whom I talked, and these individuals represented the government, banking, and nationalized industry, had but one ambition: To come to the U.S.A., take out naturalization papers, and stay here. That in itself is the best recommendation for the American system of private enterprise that I can think of.

RALPH M. SHAW, JR.,
Beverly, N. J.

► It is difficult to understand how anyone who carefully read Commissioner Murray's piece could arrive at Reader Shaw's conclusion. Throughout the article, the Commissioner cites examples to show the great role private industry is taking in the program at the Atomic Energy Commission at the present time. Then, indeed, he urges the private people to take steps now to get set for "Seven (b) Day," or the time when, according to the Atomic Energy Act, steps are to be taken by the Commission, the President, and the Congress, to determine if atomic energy should not be released from government control.—*Editor.*

Astin Case . . .

Dear Editor:

Regarding the item on the Astin case in Mr. Lunch's "From Washington" column (May '53), there is indeed an important principle at stake as to whether the government should test the claims for new products. What is surprising is that a responsible person should question it. If the need for the FTC law was recognized as far back as 1914 by our lawmakers, how much more is it needed now, with the large number of complex products we consume, many of which are considered necessities (refrigerators, automobiles, etc.).

If this function is left "to the test of the market place" it is simply neglected. What average person (or even engineer) has the facilities, ability, or time to investigate the technical articles for which he spends money? The few consumers' organizations

(*Continued on page 5*)

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American Engineer

JUNE, 1953

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. . . But the special merit of the Pan-American achievement is to have triumphed as well as we have over the temptations of heedless nationalism. We have seen and we have acted on the need to work cooperatively together to achieve common purposes. So doing, we have forged a true community of equal nations.

—PRESIDENT EISENHOWER. *before Pan American Union.*

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Letters

(*Continued from page 3*)

are the only ones set up to do this outside of the government, and their resources are small compared to the job they undertake. Furthermore their findings are available only to their members, and they make no attempt to prosecute fraudulent claims. All too often "the test of the market place" is a test of the advertising prowess of the manufacturer.

The maintenance of an active, thorough, and impartial facility to test commercial products is a healthy and valuable asset to the country. It stimulates the manufacturer to maintain and improve the quality of his product, while producing useful applied research information. With billions being spent for military research projects, certainly we can afford to spend a few of the taxpayer's dollars to keep him from being defrauded by unscrupulous advertising.

EDMUND G. TRUNK, E.I.T.,
Queens Village, L. I.

E.S.A. Answers . . .

Dear Editor:

In an effort to keep the record straight, I feel compelled to contact you regarding certain allegations and misquotations that appeared in your article "The Professional Engineer—Ascending to New Heights or Leveling Off to Mediocrity?" AMERICAN ENGINEER, April, 1953.

In the article, under the title of "Unionization of Engineering," the author implies that ESA is opposed to "any permanent legislation by Congress which would recognize engineering as a profession" since this "would curtail the field of activity of engineering collective bargaining agencies." And yet, at the House Labor Committee hearing on March 27, 1953, ESA came out for retention of Sections 2(12) and 9(b)(1) of the Taft-Hartley Act which define a professional employee and guarantee him the opportunity to free choice of a collective bargaining unit separate from non-professional employees. Furthermore, regarding the salary decontrol of "professional engineers employed in a professional capacity" passed by Congress in June, 1952, which is mentioned in the article, the story is not complete. As originally proposed by Senator Bricker and supported by NSPE, bill S. 2645, amending the Defense Production Act, provided salary decontrol only for "engineers licensed to practice as such, employed in a professional capacity by an engineer or firm of engineers engaged in the practice of his or their profession." Obviously, this amendment would have been very limited in scope, and would have applied to only about 20,000 engineers. At the time, ESA proposed the following wording to Senator Bricker: "engineers, scientists and architects including those employed in a professional capacity as defined in Section 2(12) of the Taft-Hartley Act." This wording would have applied to all employed professional engineers, architects and scientists, close to 400,000 in number. Subsequently, in debate on the floor of the Senate, Senator Bricker changed his amendment to the wording later passed by Congress: "professional engineers employed in a professional capacity." In these two instances, ESA has clearly demonstrated its intention of striving for Congressional recognition of engineering as a profession.

The various quotes attributed to me at a meeting of the Conference of Professional Technical Personnel of the Bell Telephone Laboratories in Summit, N. J., on November 19, 1952, are *actually* quotes from a report of the meeting made in the Conference Notes for December, 1952. On the matter of ESA organizing student chapters at the major engineering colleges, I did not defend "this plan by stating that professional societies have student chapters and that" ESA "is entitled to the same prerogative." I do not consider that having student chapters is a "prerogative" limited to any particular organization, but rather that student chapters are supported by the students and the colleges when and if they serve a definite need of the students.

The statements in the remainder of the article dealing with the alleged consequences of unionization of engineering employees are not borne out by fact. The past and present performances of the ESA Member Units who engage in collective bargaining with their employers, have indicated a fervent desire to insure that: meritorious individual initiative is rewarded, the leveling of engineering salaries which has resulted from past unilateral employer conduct will be overcome, and that the prestige and economic position of all engineers will be significantly improved. Several of the many examples should suffice to demonstrate the validity of the above statement without belaboring the matter.

All our Member Units have collective bargaining agreements containing clauses which provide for periodic merit reviews and accompanying merit increases. These reviews are made solely at the employer's discretion, but to insure substance in the results, most Member Unit agreements require that a certain minimum percentage of the total engineering payroll must be spent in increases and the results of the review must be made known to the Unit. In addition, the agreements set the improved general salary ranges which could only be achieved by collective bargaining, and thus provide the individual engineer with a favorable climate within which to prove his worth.

Another approach which was recently used by one ESA Member Unit to overcome the leveling of engineering salaries, was to negotiate for each employee an inequity increase which varied from 0.5% for one year's engineering experience up to 8% for 25 years' experience. In addition, all ESA Units form their negotiating demands around *percentage* general salary increases, not across - the - board fixed increases.

In an effort to further the engineer professionally, most Member Unit contracts provide educational benefits. Many engineers utilize these contract provisions as an aid in defraying the costs involved in securing advanced de-

(*Continued on page 25*)

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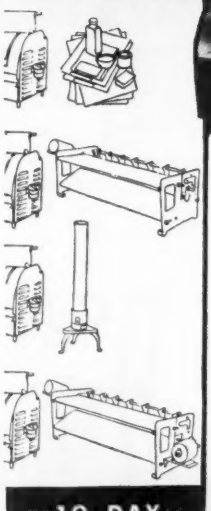

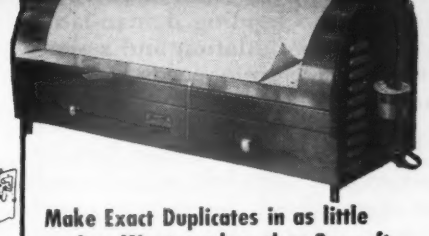

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Professional News in Capsule Form

Conference on Resources for the Future Planned • DSF Administrator Cites Engineers' Responsibility in Defense • Stepped-Up Turnover in Executive Jobs Reported • Twenty-Hour Work Week Seen Possible • Other Items of Interest

Lewis Williams Douglas, Chairman of the Board of the Mutual Life Insurance Co. of New York and former United States Ambassador to the United Kingdom, will serve as Chairman of the Mid-Century Conference on Resources for the Future, according to an announcement by Horace M. Albright, President of Resources for the Future, Inc., which is calling the meeting.

Vice-Chairmen for the Conference, which will be held next fall, are: Herman W. Steinkraus, President of the Bridgeport Brass Company; Dr. Lewis Webster Jones, President of Rutgers University; and Dr. Karl T. Compton, Chairman of the Corporation of the Massachusetts Institute of Technology.

A Council of Sponsors, composed of the heads of leading American business, farm, labor, education, conservation, and civic organizations, is cooperating with Resources for the Future in arranging the conference; and the Ford Foundation has granted $150,000 to prepare and conduct it.

The basic question to be considered will be: How can we best mobilize our resource base — land and its products, water, minerals, and energy—over the next twenty-five years or more to meet the expanding demands of a growing population and assure sound economic growth and national security.

* * *

"The efforts of the United States to win an enduring world peace through an overwhelming development of defensive strength that will deter any aggressor are based fundamentally on the industrial might which is created and maintained by engineering brains," said Defense Solid Fuels Administrator Charles W. Connor, speaking recently before the engineering societies of the University of Kentucky in Lexington.

It has been estimated, Mr. Connor pointed out, that Russia is now graduating over 50,000 engineers a year, while United States graduating classes for the next three years will be less than half as large. This quantitative advantage of the Soviet Union, however, is in large measure offset by the qualitative superiority of our engineering training, he said, emphasizing that, nevertheless, serious responsibilities will rest upon all new engineering graduates.

The general theme of Mr. Connor's address was concerned with the outlook for mining engineers in the coal industry.

* * *

Executives have been changing jobs more rapidly than ever before, according to a research report released by Booz, Allen & Hamilton, management consultants. From 1948 to 1952, industry added executives 46 per cent faster and lost them 29 per cent faster than in the 1938-42 period, the report states. Post-war economic expansion was a most important factor in the shift, because additional jobs at high salary levels were four times as plentiful as before the war.

Chief reasons for transfers given by job-seeking executives interviewed by the researchers were their desires to step up immediately to bigger jobs with more responsibility, find greater opportunity for future growth, obtain increased income, and end unhappy situations involving policy differences.

* * *

The 20-hour work week for American industry is well within the realm of possibility, according to Dr. Lillian M. Gilbreth, the internationally-known consulting engineer and efficiency expert. Speaking before the Spring Conference of the Washington, D. C., chapter of the Society for the Advancement of Management, Dr. Gilbreth predicted that by taking the drudgery out of work and by increased mechanization the United States would eventually be able to produce enough for itself and the rest of the world during such a short work week. A great problem of the future then, she said, will be how a person is to spend his increased leisure time.

* * *

NSPE member Col. Frank F. Groseclose has been nominated for the position of national president of the American Institute Industrial Engineers. Director of Georgia Tech's School of Industrial Engineering, Col. Groseclose is currently on leave and serving as head of the Equipment Research Department, U. S. Navy, Port Hueneme, California. His home residence is in Atlanta, and he is a registered professional engineer in both Georgia and North Carolina.

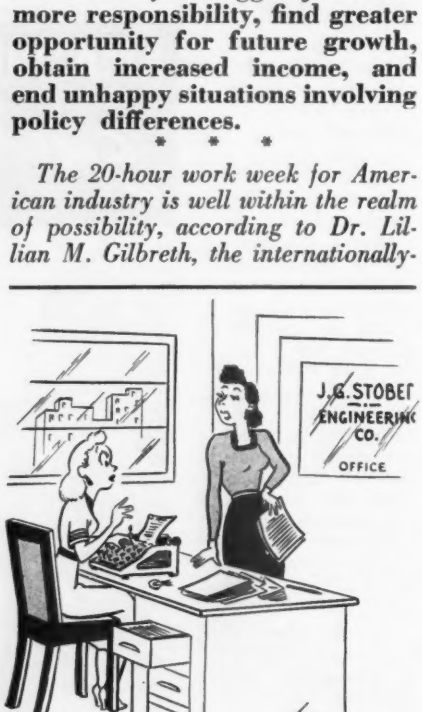
* * *

There are great opportunities for the industrial engineer to broaden his service to society and thereby triple his income over the next five years, according to Harold F. Smiddy, vice president of the General Electric Company. The engineer who is awake to these potentials can realize them either by better individual creative performance in the field of industrial engineering as such or by direct participation in the field of management where his organizational talents can be put to particularly good use. The only "missing ingredient" to retard climbing either path to greater performance, service, recognition, and income, said Mr. Smiddy, is the will of the individual engineer himself.

Mr. Smiddy made his remarks at a conference on industrial engineering sponsored by the Society for the Advancement of Management at New York's Statler Hotel.

* * *

NSPE's first president, D. B. Steinman, is establishing something of a record in receiving six honorary degrees this spring. The honors are accorded as follows: April 15, Sequoia University, Los Angeles, Cal., Doctor of Science in Engineering; April 25,



"Section modulus . . . tensile strength . . . factor of safety . . . centrifugal force . . . center of gravity . . . coefficient of friction . . . sometimes I think we're in a foreign country!!"

Manhattan College, New York City, Doctor of Engineering; June 2, Columbia University, New York City, Doctor of Science; June 5, Rensselaer Polytechnic Institute, Troy, N. Y., Doctor of Engineering; June 7, Ohio Northern University, Ada, Ohio, Doctor of Engineering; and June 8, Alfred University, Alfred, N. Y., Doctor of Laws.

* * *

Charles B. Spencer, president of the New York engineering firm of Spencer, White & Prentis, has been named the 1953 winner of the Egleston Medal, the top honor bestowed by Columbia University's Engineering Alumni Association. The award is named in memory of Thomas Egleston, founder and first dean of the Columbia School of Mines, forerunner of the present Engineering School.

* * *

Hiring an engineer today, according to a recent story in *Business Week*, costs about $1,000, "including advertising, recruiting teams, plant tours, and an occasional golf bag."

* * *

The Chamber of Commerce of the United States has adopted an entirely new policy calling for businessmen to assume greater responsibility for financing higher education. "In supporting higher education," the resolution stated in part, "business should be mindful of the immeasurable contributions to the arts, sciences and citizenship of our nongovernmental colleges and universities, and of their financial plight due to economic conditions. . . . Business and education have a reciprocal stewardship; business to support a dynamic system of higher education; education to produce an increasing number of graduates who have been well grounded in the functioning of the American economic system through an understanding of its operation, and of their responsibilities to safeguard and protect it."

* * *

Members of the Society of Motion Picture and Television Engineers, meeting in convention at the Los Angeles Statler Hotel, heard I. A. Sherman, a Bausch & Lomb vision specialist, state that three-dimensional movies hold the possibility of both revealing and helping to correct unsuspected vision difficulties among as many as 15 per cent of the American public. While emphasizing that 3-D was in no way to be considered a substitute for professional eye treatment, Mr. Sherman suggested that it would prove a valuable adjunct to that field. Involving essentially the same principles and mechanics as stereoscopic apparatus used to test and train the eyes, 3-D does relate specifically, Mr. Sherman said, to binocular (two-eyed) coordination and maladjustments therein.

* * *

The annual Ohio Highway Engineering Conference and Road Show, attracting an attendance of more than 1,500 engineers, contractors, and public works officials, was held May 19-21 at Ohio State University. Several million dollars worth of construction equipment was on display for the four-day Conference, which was sponsored jointly by the Ohio State University Department of Civil Engineering and the Ohio Department of Highways.

* * *

Tau Beta Pi graduate fellowship awards for 1953-54 have been awarded to the following young engineers: Leonard Kranser, Flushing, N. Y.; Thomas E. Burk, Olean, N. Y.; W. Thomas Darnell, Harrisonburg, Va.; William H. Groetzinger III, Havertown, Pa., and Huntsville, Ala.; and William A. Stewart, Eggertsville, Illinois.

* * *

Four South Korean engineering schools are scheduled to receive approximately $22,600 worth of new books on engineering sent through CARE by the United Nations' Korean Reconstruction Agency. Part of $150,000 worth of new text and reference books that CARE is buying and shipping to war - depleted Korean universities for UNKRA, the engineering volumes represent over 2,000 titles. Ninety per cent are American works, with the balance English, French, and German titles.

The technical books were specifically requested by the engineering colleges of Seoul National, Chun Nam, Chun Puk and Chosun Christian Universities. They will be the first books delivered to Korea by CARE since the outbreak of hostilities.

* * *

Rear Admiral Lewis N. Moeller, Director of the Pacific and Alaskan Division, Bureau of Yards and Docks, U.S.N., is retiring after more than 35 years of Navy service. He has been associated with some of the Navy's most ambitious building projects in this country and throughout the Pacific and is also the author of a book on mechanics. At one time he was an instructor at the Drexel Institute in Philadelphia.

Admiral Moeller now plans to join the southern engineering firm of Palmer and Baker, Inc.

* * *

The Phillips Foundation of New York has given $1,200,000 to Cornell University for a new School of Electrical Engineering, according to a recent announcement from Ithaca. The building will be in addition to a new engineering group that already includes Olin Hall of Chemical and Metallurgical Engineering and two engineering materials units, Kimball and Thurston Halls.

* * *

The American Society for Engineering Education has reported that the Illinois Institute of Technology has the largest registration among the U. S. engineering schools, with 4,621 undergraduates, and 920 graduate students.

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An *American Engineer* SPECIAL REPORT

Re: *Reference Material on Engineering as a Career*

● This is the time of year when high school graduates are wondering just what paths to follow during their college careers. Perhaps they have already selected the universities which they will attend. Perhaps they have even decided on an engineering course, but are not quite certain as to the best field in which to specialize. In any case it certainly is the time when they will appreciate the advice that established engineers have to offer. They have important questions to ask, and they need informed, realistic replies.

If your guidance has been sought by a potential engineer and you are wondering how best to help him, you may very well find the answer in some of the material listed in the following bibliography. You may want to suggest that the prospective engineer look the list over himself and write for whatever items interest him. Or you may want to tear the page out and give it to a guidance teacher of your acquaintance. The important thing is to reach as many potential engineers as possible, because it is the professional and civic responsibility of the established engineer to do all that he can to help alleviate the shortage of trained technical personnel that will reportedly be with us for quite a few years to come.

Available from the NSPE:

"Educating the 1950 Model Engineers," May, 1950, American Engineer.

"How a Professional Attitude can be Instilled in Engineers," August, 1950, American Engineer.

"Engineering . . . a Career of Opportunity." 8-page booklet for students.

Brief General List of Guidance Pamphlets in the Engineering and Science Fields. (Please order direct from the publishing organization as NSPE does not have available for distribution.)

"Guidance Manual"—Engineers' Council for Professional Development, 1951. 15 cents each. (Manual with questionnaire—20 cents). 25% discount on 25 or more.

"Shall I Study Engineering?"—Engineers' Council for Professional Development, 1942. 36 pp., 15 cents each. 10 cents each in lots of 50 or more.

"List of Accredited, Undergraduate Engineering Curricula," Annual December revision. (Includes also list of group of curricula of technical institute type.)—Engineers' Council for Professional Development. 20 pp., 25 cents each.

"Annual Reports" (contain list of accredited curricula and seven committee reports, viz., guidance, education, student development, training, recognition, ethics, and information.)—Engineers' Council for Professional Development. December 1st. 50 cents each.

"The Most Desirable Personal Characteristics"—Engineers' Council for Professional Development, 1948. 28 pp., with charts. 25 cents each.

"So You Want to Be an Engineer?" Reprint from POWER, 1938.—Engineers' Council for Professional Development. 2 pp., 5 cents each.

"The Second Mile." Survey of engineering profession; address by W. E. Wickenden before The Engineering Institute of Canada, 1941. Revised—Engineer's Council for Professional Development. 11 pp., 15 cents each; $5.00 per C.

"A Professional Guide for Junior Engineers." A guide for college students and young graduate engineers. W. E. Wickenden and G. Ross Henninger.—Engineers' Council for Professional Development. 64 pp., $1.00 each.

"The Electrical Engineer"—American Institute of Electrical Engineers, 33 West 39th Street, New York 18, New York, 1949. 32 pp., 20 cents each.

"Careers in the Mineral Industries"—American Institute of Mining and Metallurgical Engineers, 29 West 39th Street, New York 18, N. Y. 25 cents each.

"The Profession of Engineering in Canada"—The Engineering Institute of Canada, 2050 Mansfield Street, Montreal 2, Canada. English and French editions. Free.

"The Chemical Profession"—American Chemical Society, 1155 Sixteenth Street, N.W., Washington 6, D. C., 1951. 40 pp., 25 cents each. Quantity discount.

"Agricultural Engineering as a Professional Career"—American Society of Agricultural Engineers, St. Joseph, Michigan. 8 pp.

"Your Future." Series on fields of engineering. Dept. of Education, Baltimore, Md.

"Careers with a Future." "The Engineer in Public Health"—American Public Health Association, 1790 Broadway, New York 19, New York, 1950. 8 pp.

Considerable list of leaflets in engineering—The Institute for Research, 537 South Dearborn Street, Chicago, Illinois. $1.00 each.

"Career in Engineering," Lowell O. Stewart, Iowa State College, Ames, Iowa. 92 pp., 75 cents each.

Vocational and Professional Monographs. Series includes fields of engineering.—Bellman Publishing Company, Inc., 7 Park Place, Boston, Mass. 50 cents-75 cents each.

"Occupational Outlook Handbook" — Supt. of Documents, Washington 25, D. C. $3.00 each.

"Outlook for Women in Architecture and Engineering." Bulletin 223-5, U. S. Dept. of Labor (Women's Bureau)—Supt. of Documents, Washington 25, D. C., 25 cents each.

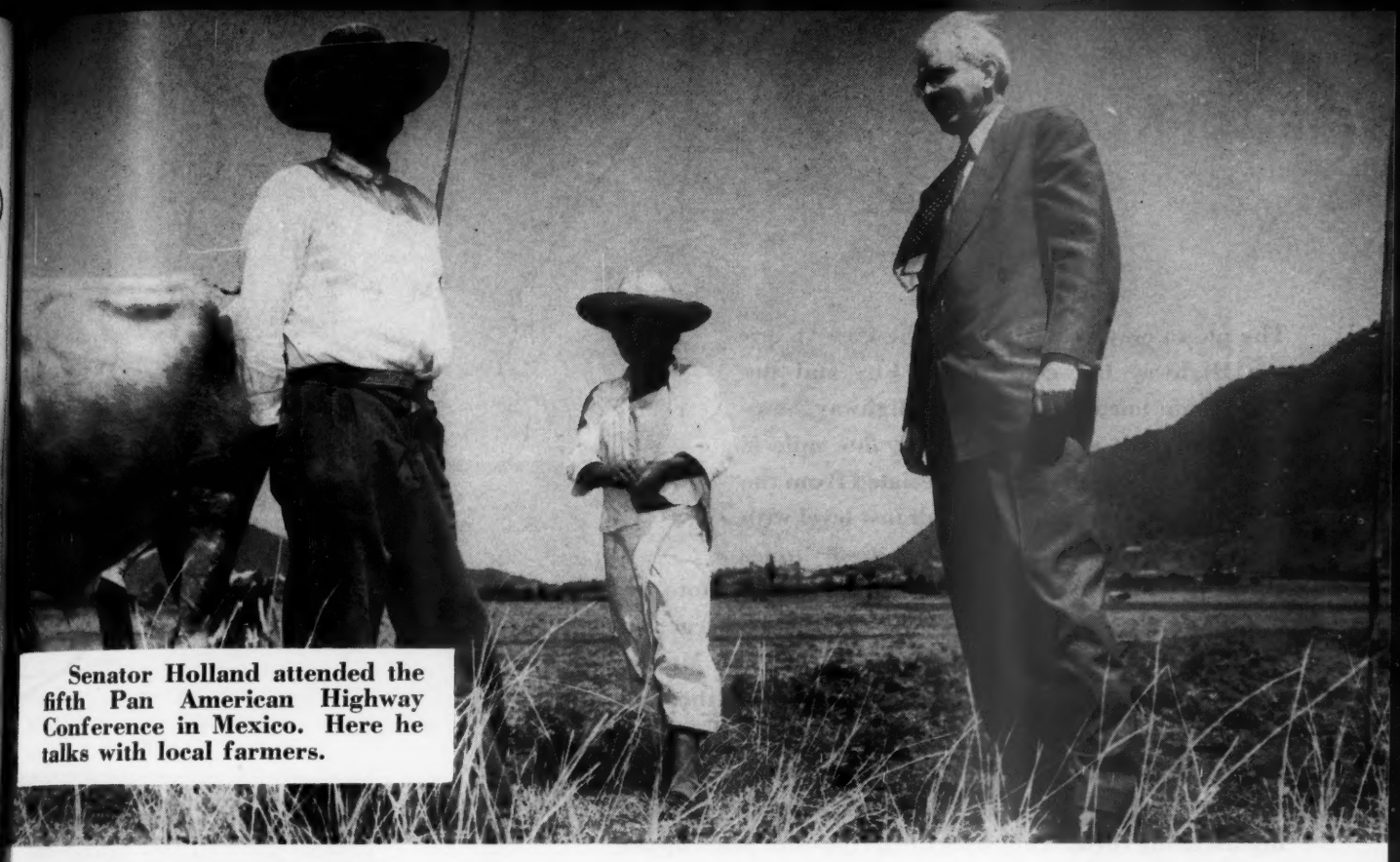
"Engineering Sciences." Pamphlet No. 2 in Description of Professions Series.—Supt. of Documents, Washington 25, D. C. 15 cents each. Stamps not accepted.

"Scholarships and Fellowships Available at Institutions of Higher Education." Bulletin, 1951, No. 16.—Supt. of Documents, Washington 25, D. C. 55 cents each.

"Occupational Briefs on America's Major Job Fields." Includes separate leaflets on careers, including engineering fields.—Science Research Associates, Chicago 4, Illinois. Sold on subscription basis at $5.00 per year.

"Your Opportunities in Science"—National Association of Manufacturers, 14 West 49th Street, New York 20, New York. 30 pp.

Note: Orders sent to Engineers' Council for Professional Development must be prepaid in amounts under $1.00.



Senator Holland attended the fifth Pan American Highway Conference in Mexico. Here he talks with local farmers.

COMING TRUE—AN ENGINEER'S DREAM

Spessard L. Holland,
United States Senator from Florida

You've Heard About a Pan American Highway for Years as Being "Just Around the Corner." Well, It's Now a Near Reality and It Will Be Vital to Our Welfare.

TODAY, thanks largely to the imagination and persistence of clear-visioned engineers of both North and South America, we are in sight of the completion of an epochal line of communications which will bring us much closer to people who are our traditional friends and thus give further assurance of avoiding in this hemisphere the terrible things which are happening elsewhere. I am referring, of course, to the Pan American Highway, the great system of roadways designed to link and provide easy access to the capital cities of the two continents of the Western Hemisphere and which, not so long ago, was regarded by many people as a foolish and impossible notion, an "engineer's dream."

Yet an "engineer's dream" is exactly what the idea was and is—a very sound and practical dream that is rapidly coming true in such a way that, when the entire Pan American system is completed, we will have something more than just another technical engineering marvel about which to boast. We will also have accomplished three very important objectives:

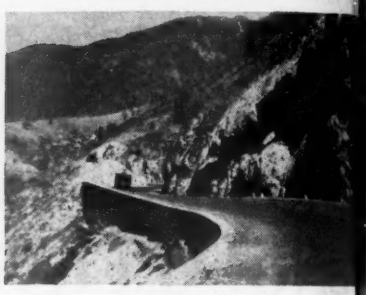
First of all, we will have come a long way toward integrating our cultural relationships and establishing a practical means whereby we can become much better "good neighbors." Secondly, we will have strengthened the economic situation of every American country involved, including our own. Thirdly, and most important, we will have improved our own as well as the hemispheric strategic defense.

Approximately two-thirds of the Pan American system as now designated has already been so improved that automobile travel at all seasons of the year is possible. Travel at present, however, is chiefly from farm to market or between adjacent towns and cities. Across-the-border travel between a number of countries is possible, but certain still-impassable gaps and sections of the highway that can be safely traversed only during the dry season or not at all remain to hamper long-distance movement for the time being.

However, every day further progress is being made. The jungle is literally being pushed back in many places by the engineer and his co-workers; tunnels and roadways are being blasted out of supposedly "impassable" mountains; other bottleneck problems are being tackled with confidence and enthusiasm.

This was brought home to me personally with dramatic emphasis when, as a member of the U. S. delegation, it was my privilege to attend the fifth Pan American Highway Congress that convened in Mexico City last October. In these days of confusion and misunderstanding in so many places throughout the world, it was heartening to see there the tangible evidence of understanding, friendship, and common effort in the Western Hemisphere as the representatives of the sixteen nations in attendance worked shoulder to shoulder striving to establish a definite continuity in the handling of their general highway problems as well as such special projects as the intercontinental road system.

The Mexico City Congress did some very definite plan-



The photo on this page shows the Pan American Highway between Mexico City and the Guatemala border, on Mexico Highway Number Two. This section for about one mile is very dangerous as can be appreciated from the fact that the retaining wall is almost level with the highway. Slow speed of about twenty miles an hour is high enough through this area. Photo on opposite page, upper left corner: Here is construction work under way on the Pan American between Mexico City and El Paso, Texas. Most of the surface through here is of excellent quality, and the picturesque drive from the border has attracted many American visitors. Opposite page, lower left: This striking photo shows a big fill being formed at Costa Rica. Opposite page, upper right: Scenes along the way. These ruins of a church are in Panama. It was first built in 1535. Opposite page, lower right: The roadway stretches through South America. Here is the mountainous route between Lima and Arequipa in Peru.

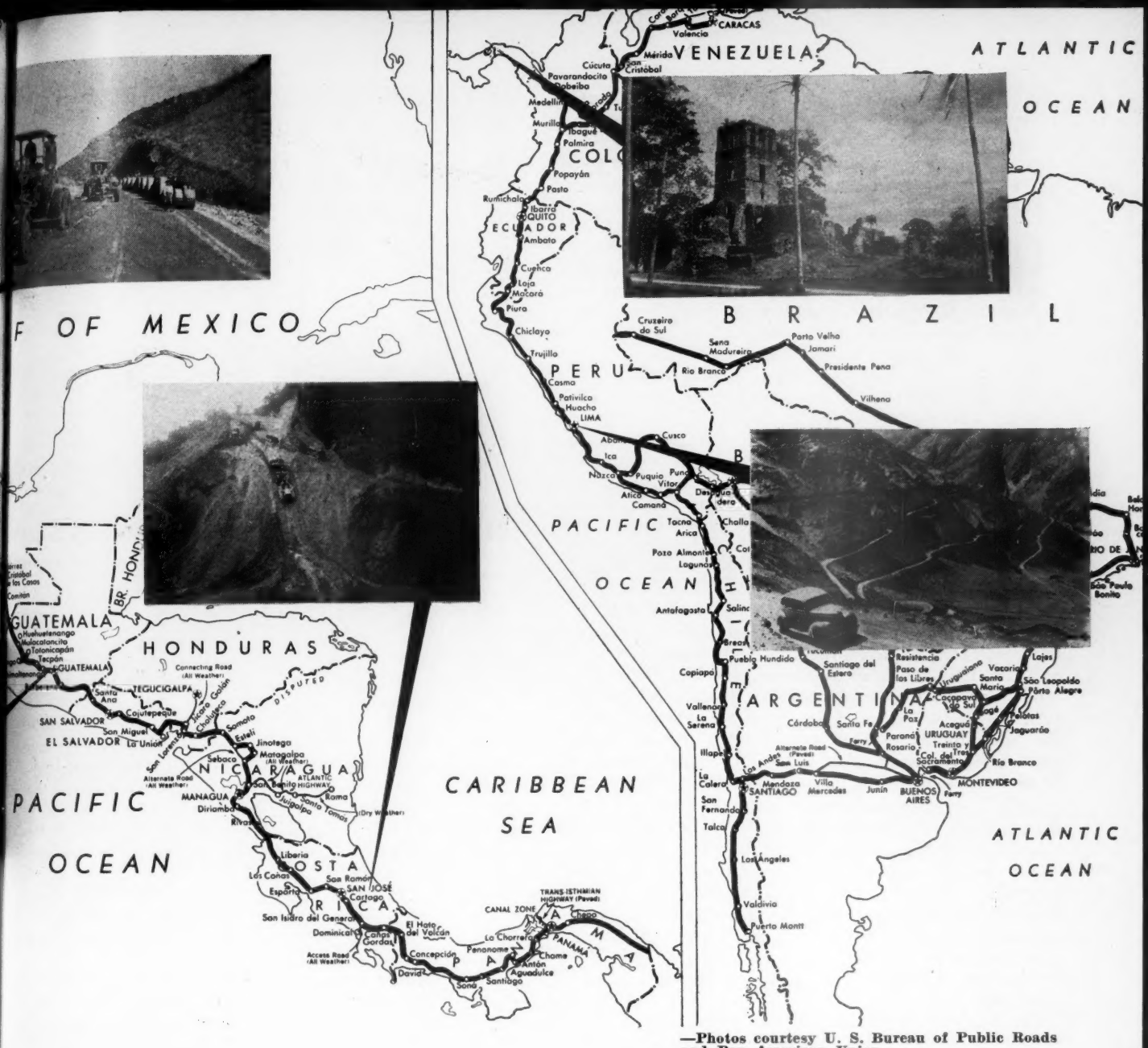
ning for the immediate future. It set up three committees of experts, among whose combined membership will be distributed qualified representatives of all the twenty-one American Republics. One of these committees is to make recommendations as to how to establish a modern highway department in each country which is not yet well organized in this field; another is to map the routing of the whole Pan American Highway and its feeder road system from Alaska to Argentina; and a third is to propose plans for the financing of public highways. Furthermore, a sixth Highway Congress is already scheduled for Caracas, Venezuela, in 1954, and an interim committee is studying plans for a permanent Pan American Highway organization, a proposal which is favored by many of the Latin American countries.

BEHIND all this current activity, incidentally, is a long and interesting history which I should like to summarize briefly here. The dream of inter-American cooperation and solidarity goes back to the very first days of the republics, to the time of the celebrated Liberator, Simon Bolivar, and such early U. S. advocates of hemispheric friendship as Henry Clay. Bolivar himself spurred the assembling of the newly-independent Latin American representatives at the Congress of Panama in 1826. Two United States delegates had been appointed to attend; but, unfortunately, one died en route, and the second was delayed so that he did not arrive in Panama until after the conference.

Several other Latin American conferences on problems of mutual interest were held after that, but it was not until the United States Government issued its invitation for a Washington, D. C., meeting in 1889 that the first major steps were taken for the establishment of the Pan American Union, now the Secretariat and permanent central unit for the Organization of American States.

At this First International Conference in Washington the idea of a single railway route to join all the American republics was suggested. A technical commission was appointed to study and facilitate the plan; and, while various factors delayed the construction of such a railway, the topic was on the agenda for all succeeding Pan American conferences until at the fifth such meeting, held in Santiago, Chile, in 1923, the highway project was proposed in its stead. A resolution was then approved "That there be convened, at a date and place to be determined by the governing board of the Pan American Union, a conference on automobile highways to study measures best adapted to develop an efficient program for the construction of automobile highways within the different countries of America and between these countries."

It was felt by the Latin American engineers that a route could be surveyed that would include such good roads as were already in existence and that gradually others could be added and improvements in existing facilities made so that the network would be complete. A Pan American Highway Confederation was soon formed with headquar-



—Photos courtesy U. S. Bureau of Public Roads and Pan American Union.

ters in Washington; and in the same year, 1924, a Pan American Highway Commission composed of Latin American engineers and others toured the United States to study this country's highway system in preparation both for further work in their own individual countries and for the compilation of an agenda for the pending initial Pan American Highway Conference, which was held in Buenos Aires in October 1925.

In 1928, the delegates to the Sixth International Conference of American States, held in Havana, recommended that, at the forthcoming second Highway Congress in Rio de Janeiro, consideration be given to the adoption of agreements "looking to the construction of a road of longitudinal communication across the continent." Member governments of the Pan American Union were urged to cooperate as far as possible in the fulfillment of the project, and such cooperation was promptly given and continues to the present.

In March 1929, the United States Congress authorized an appropriation of $50,000 to cover the expense of a first reconnaissance of the road, and this sum was the first amount spent in the preliminary survey of the Highway. In the same year there was a meeting of United States, Mexican, and Central American engineers to consider plans for the Inter-American branch of the proposed highway system which was to run from the United States to the Panama Canal.

It is this Inter-American Highway, naturally, in which the United States has the greatest immediate interest. As I stated at the Mexico City Conference on behalf of our delegation:

> "The United States favors the early completion of the Inter-American Highway, which will provide modern and efficient overland communication through the friendly Republics extending from Panama to the United States. As tangible evidence of our continuing interest and cooperation, the United States has given substantial assistance, technically and financially, to the construction of the highway.
>
> "For example, under legislation enacted by the United States Congress and through bilateral agreements entered into with individual Republics for the purpose of sharing construction costs, more than $40 million has already been spent or committed by the United States, most of it in recent years. As further

assurance of our sincere and friendly interest, the United States Congress has this year [1952] authorized, but not yet appropriated, an additional sum of $16 million, consisting of $8 million for each of the next two fiscal years, 1953 and 1954, for the purpose of continuing the construction of this highway on a cooperative basis.

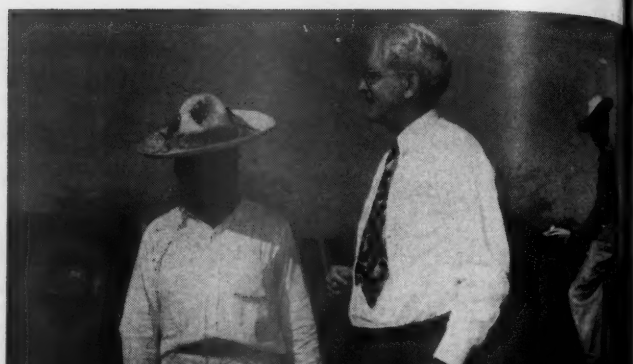
"We all look forward to the early completion of the highway from Panama to the United States so that all kinds of motor vehicles may move readily across this magnificently interesting and important region and promote its economic development, along with hemispheric understanding and greater solidarity.

". . . We firmly believe that the completion of the Inter-American Highway will be highly beneficial to our Nation and to each of our friendly neighbors which it will traverse."

While preliminary studies were continued, various Congressional appropriations were made, and some construction work got under way during the thirties, it was not until war clouds loomed on the horizon that completion of this Inter-American Highway came to be regarded as a matter of primary importance, particularly since it could provide an invaluable land link to the Panama Canal. A $20 million appropriation was authorized by Congress in 1941 to be used by agreement with the separate Central American countries to close gaps in the road, with each country adding its quota to the U. S. allotment. In 1942, the Army Engineers, with War Department funds, undertook the construction of a so-called "pioneer road" between sections of first class roads being built by the Public Roads Administration and the highway departments of each country. And in 1943, Congress appropriated an additional $12 million to accelerate the project.

FORTUNATELY, ultimate victory during World War II never came to depend upon a clear land link to the Canal Zone; for, although great progress was made, it would have taken even more than a superhuman effort to overcome all the obstacles with which the engineers had to contend within a limited time. Fortunately, also, by this date many more of these difficulties have been conquered so that the prospects for early completion are most promising.

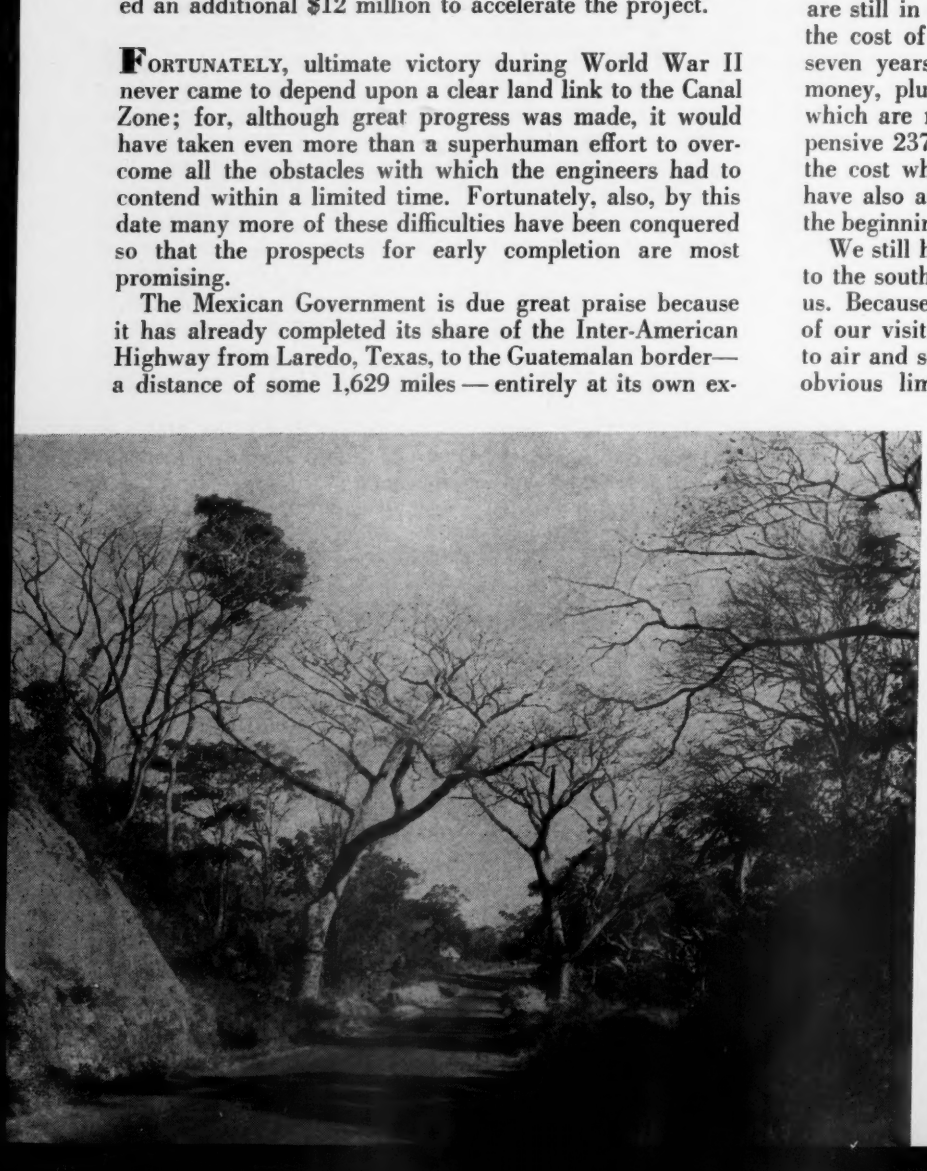
The Mexican Government is due great praise because it has already completed its share of the Inter-American Highway from Laredo, Texas, to the Guatemalan border—a distance of some 1,629 miles — entirely at its own expense. It is a very fine road, comparable to our own trunk highways, and only a few miles at the southern border lack final surfacing.



Senator Holland is shown above during a hoof and mouth disease inspection trip in Mexico in 1950.

Of the 1,590 miles that remain between the Mexican border and the Canal, only 237 miles, distributed through the rugged terrain of Panama, Costa Rica, and Guatemala, are still in an impassable condition. It is estimated that the cost of closing these difficult gaps over a period of seven years will be about $56 million of United States money, plus the matching funds of the other countries which are required under our law. They will be an expensive 237 miles, it is true, but they will be well worth the cost when we find that in building the highway we have also achieved the three objectives that I outlined at the beginning of this article.

We still have a great deal to learn about our neighbors to the south, and they, in turn, have much to learn about us. Because of the great natural obstacles in the way, most of our visiting back and forth at the present is confined to air and sea travel, which are fairly expensive and have obvious limitations when it comes to the question of



Here is shown a portion of the Pan American Highway between Managua and Diriamba, Nicaragua. As of January, 1953, all but 237 miles in the Central American links were either paved or all-weather roads. Hardy engineers are now battling nature to make passable the remaining strips.

really getting to know a country by traveling through it.

With through automobile travel possible, however, even just as far as the Canal Zone on the Inter-American Highway, magnificent new scenic vistas will be opened, and the trip in either direction will be an education in itself. And I understand that the contingent South American route will, in some sections, parallel old Inca trails and follow the famous "gold roads" built by the Spanish *conquistadores*. Surely nobody denies that history is most impressive when learned from actual contact with its relics and visits to the scenes of outstanding events. An appreciation of the story behind a country's civilization must always bring a better understanding of its current attitudes and problems.

Unhappily today we sometimes hear the accusation that the United States has been neglecting its policy of "good neighborliness," and we hear also of suspicion of and even hostility toward U. S. citizens among some of the people, particularly in the more remote areas, south of the border. An easily accessible avenue of communications open to anyone who cares to traverse it would do much to eliminate misconceptions of this sort and bring us all closer together.

ASIDE from the intangible value of travel to the tourists themselves, there is also the second point that I mentioned earlier—the strengthening of the economic situation of each country concerned. A nation that is strong economically also makes a better neighbor. Here, in the United States, we admittedly enjoy a very favorable economic position, but such is not always the case in Latin America where there unfortunately remain many underdeveloped areas.

The tourist trade, however, brought in by a good highway route through a country means an almost automatic lift to its economy. That of Mexico, for instance, has been strengthened enormously by the influx of travelers taking the Inter-American route and other existing good roads. In 1951 alone, for example, the friendly stream of visitors produced an estimated dollar income of about $150 million for that friendly country. Day by day villages along the highway are being transformed from mere clusters of adobe huts to clean, prosperous little towns, The people are gaining a new social and economic outlook, new incentive, and the entire so-called "tourist industry" is booming, providing services, accommodations, and, of course, souvenirs for the traveler.

About the Author . . .

Spessard L. Holland (Dem., Fla.)—citrus grower, lawyer, and former teacher—is the first native of Florida to serve as both Governor of the State and United States Senator. He held the governorship from 1941 to 1945, first became a U. S. Senator in 1947, and is currently serving his second six-year term in that capacity, having been re-elected in November 1952. His name has most recently been in the news in connection with his support of the Tidelands Oil Bill. His two standing Senate Committees are the Committee on Public Works and the Committee on Agriculture and Forestry.

Sen. Holland

Senator Holland is a graduate of Emory College, now Emory University, and of the University of Florida Law School. An all-around athlete, he won letters in track, football, basketball, and baseball during his college years and was once offered a contract by Connie Mack.

One of the Senator's deepest interests is the conservation of Florida's natural resources, including wild life.

When the Inter-American Highway is cut through all the way to the Canal, it will place the Central American countries on a more nearly equal basis with Mexico in sharing this growing American tourist trade and thus will contribute substantially to their economies.

In addition, easier access facilitates the import-export trade. It is not inconceivable that long-distance trucking will play an important role in the inter-American commerce of the future. And at any rate, as the Latin American economies expand and improve, they will want from us more machinery, automobiles, farm equipment, steel, chemicals, and other products. Our chief imports from them at present are coffee, sugar, copper, and petroleum; and we also need for our defense production many other strategically important materials which the Latin American nations can supply, including chromium, vanadium,

(*Continued on page* 39)

Here is the town of Zacatecas, Mexico, on the way to El Paso, Texas, from Mexico City. The modern bus is traveling under a Spanish aqueduct that is about 300 years old. The day is not far off when American tourists will travel from Peoria to Peru in their automobiles.

Engineers Are Artists, Too!

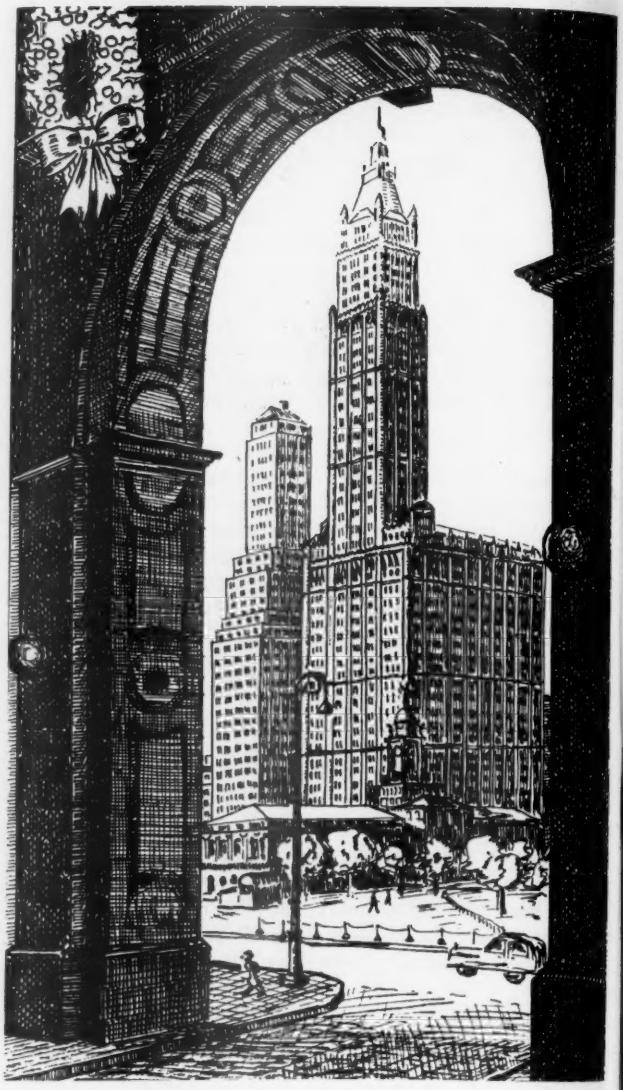
Introducing Remig A. Papp, Pen-and-Ink Specialist

When the AMERICAN ENGINEER extended its invitation last April to engineers "who are artists, too," to send in samples of their work, an impressive variety of replies was received. NSPE members are certainly at the forefront of artistic as well as technical and professional endeavor—so much so that a new series of AE articles is being planned around their achievements.

Remig A. Papp, for instance, a resident of Flushing, New York, and a member of the New York State SPE, contributed the two fine pen-and-ink drawings reproduced on this page, introducing himself as follows: "I am a civil engineer dedicated to foundations and hydraulic water front structures. My professional life has been too turbulent—due to historic times—to give a short account of it. I worked in Hungary, Germany, France, and, of course, here in the United States. I worked at the port extension of Dunkerque in France; projected a rolling gate weir in Chemnitz in Germany twenty-five years ago; projected and partly executed the Northern Harbor of Budapest in Hungary; and worked on the foundations of the Danskammer Power Station on the Central Hudson on one of the most scenic construction sites. . . .

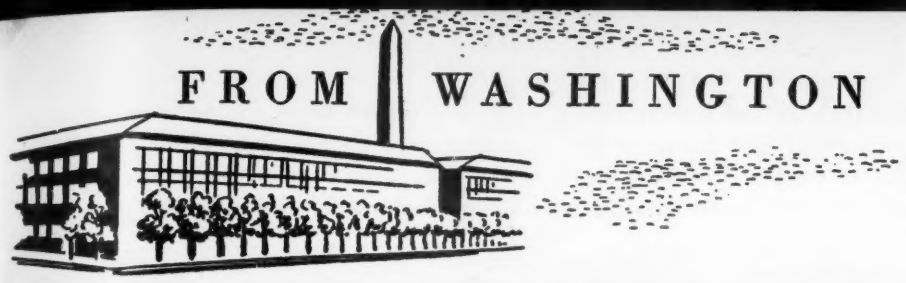
"I started to draw with pen and ink since I found that with pen I can show things as I see them, more subjectively than with the objectivity of a camera. It is a nice pastime which I can recommend to everybody."

All it takes to produce drawings like these, says Engineer Papp, is a "good eye and some patience." It also takes real artistry, a talent of which Mr. Papp can well be proud.



Above is Remig A. Papp's pen-and-ink drawing of the Woolworth Building in downtown New York, where the talented engineer is now working for Burns and Roe, Inc. He has used this scene for personalized Christmas cards —the reason for the holly wreath sketched in at the upper left hand corner.

At the left is his interpretation of the rolling gate weir on the Ruhr River near Essen where he worked for the Military Government of Germany.



By
Milton F. Lunch,
N.S.P.E.'s Legislative Analyst

The role of professional engineers in the high-level planning organization of the nation's military establishment will be greatly expanded if the President's reorganization plan for the Department of Defense is approved by Congress. In his message to Congress, President Eisenhower makes the point that "only by including outstanding civilian experts in the process of strategic planning can our military services bring new weapons rapidly into their established weapons system, make recommendations with respect to the use of new systems of weapons in the future war plans, and see that the whole range of scientific information and knowledge of fundamental cost factors are taken into account in strategic planning." The President promises that under the reorganization special attention will be given to providing for the participation of competent civilian scientists and engineers within the substructure of the Joint Chiefs of Staff. "Such participants will be able to contribute a wide range of scientific information and knowledge to our strategic planning," he stated.

The revised defense structure is to include an Assistant Secretary of Defense for Applications Engineering. The Rockefeller Committee, established earlier in the year to study the Defense Department organization, and which has now submitted its report which is the basis of the President's plan, says that the engineer-assistant secretary should operate "in the broad field which lies between research and development, on the one hand, and the quantity production of weapons, on the other." According to the report, the function of the engineering office would be to examine into and make recommendations concerning new developments as to their suitability for the purposes intended; their reliability, simplicity, and economy of production, especially with respect to their suitability for production by existing machine tools and other facilities; and their ability to fit into a complete weapons system. An additional duty of the engineer-official would be the assumption of certain functions heretofore assigned to the Munitions Board, which is to be abolished. These would include engineering policies and standardization problems.

The Research and Development Board will also be eliminated under the President's plan, and in its place there will be an Assistant Secretary (Research and Development). The Rockefeller report does not indicate that this official should necessarily be an engineer but the scope of duties includes considerable engineering responsibility. The research and development official would be concerned, for instance, with "the trends in scientific research relating to national security and regarding the interaction of research and development and strategy." The two Assistant Secretaries (Applications Engineering and Research and Development) would obviously require close coordination of efforts if the benefits of the plan are to be realized.

Two other Assistant Secretaries—Supply and Logistics and Properties and Installations—would also have responsibility in fields involving engineering operations, such as procurement, production planning, distribution, transportation, stockpiling, and warehousing (Supply and Logistics) and installations, properties, public-works programs, uniform design criteria, and construction standards (Properties and Installations).

Congress has until the end of June to act on the plan; if no action is taken by that time the reorganization will go into effect. There is some dissatisfaction with the far-reaching proposal among certain members of Congress. Senator Long of Louisiana, for example, is opposed to the abolition of the Office of Director of Installations on the ground that this office has effected considerable economies in the planning and construction of defense installations, but he has not given any convincing reasons for believing that an Assistant Secretary of Defense for the same function would not be just as effective. Some believe that the plan delegates too much authority to the Secretary of Defense and is, in fact, unconstitutional because of the proposed broad delegation of authority away from the Commander-in-Chief and the Congress. At the moment, however, it appears that the opposition will not be strong enough to block the defense changes. If the plan goes into effect it may be expected that engineers will play a more prominent part in our national defense planning.

(*Please turn the page*)

The perennial debate over U. S. participation in the St. Lawrence Seaway project appears to be heading for a "show-down" this year. After being set back year after year, the supporters of the project have their hopes high following an endorsement by the entire Eisenhower cabinet. This action by the cabinet followed a similar action by the National Security Council last month, which declared that the early completion of the waterway would contribute to the national defense.

Under the cabinet action, the Seaway would be constructed on a revised basis (see diagram) which would permit ocean-going vessels using the seaway to go through Lake Erie to and from Toledo. Under previous plans the ships could have gone as far as Duluth. The administration estimates that this country's participation under the limited plan would involve an expenditure of approximately $100,000,000 to be liquidated over a period of fifty years.

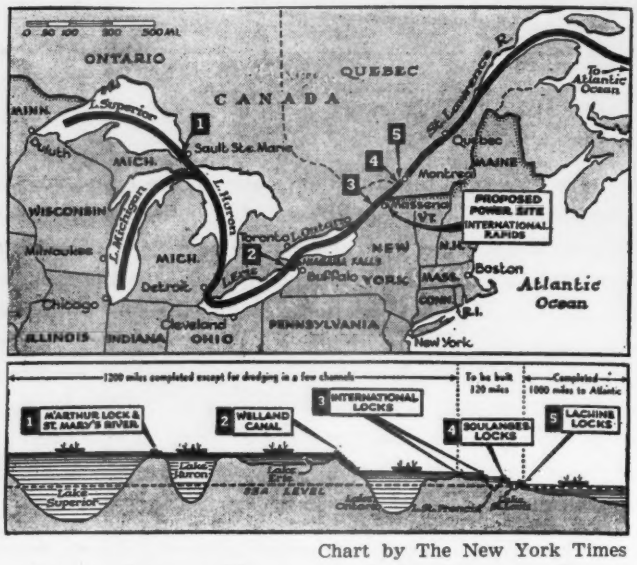


Chart by The New York Times

Seaway System: The proposed St. Lawrence Seaway (heavy black line on map) would reach only to Toledo, Ohio, under the Administration plan. The United States and Canada would join in constructing a ship channel in the International Rapids section of the river. Water levels on the seaway are compared in the lower diagram.

The power phase of the project is awaiting action by the Federal Power Commission granting New York State authority to proceed with the joint hydroelectric development by the State and the Province of Ontario. President Eisenhower and Louis S. St. Laurent, the Canadian Prime Minister, have issued a joint statement expressing the hope of an early and favorable decision by the commission on the hydroelectric portion of the project.

One of the major points in the Cabinet endorsement is that the United States is to limit its participation in the project to the International Rapids section, which runs about forty-two miles along the St. Lawrence river. A special committee of cabinet members said that "participation by the United States now in the construction and operation of a St. Lawrence River Seaway would increase its defense advantages to this country and would in time of emergency assure it of full benefits of joint participation. Participation by the United States now in the project would strengthen our strategic position at all times respecting use of the seaway for transportation of basic materials."

When President Eisenhower was head of Columbia University he organized a national council on scientific manpower to conduct "a continuing appraisal of America's manpower resources in a period of enduring emergency." Now this group established by Mr. Eisenhower is ready to report its findings to President Eisenhower, following a two-year study.

The report declares that there is a "serious shortage of brainpower involving danger to national security and social progress" and recommends the formulation of a policy for professional and scientific manpower. (For details see Special AE Report in July issue) A White House spokesman has indicated that the council's first report "will provide a blueprint for some of the operations in Government" in the manpower area. The study "opens the door to new and challenging issues of public policy involving more effective use of the country's human resources and development of potential skills and capacities from areas of wasted human ability," the White House announcement declared.

The 263-page study contains a policy statement by the council with specific recommendations for improving the supply and quality of professional manpower, and detailed staff studies of the situation in four professions—engineering, teaching, physics, and medicine.

That this document will be a major influence in guiding governmental and private policies in the professional manpower field is seen from the editorial comment of the influential New York Times, which declared, "obviously the twin problems of increasing our supply of trained, able people and improving our utilization of the personnel now available are of the highest importance. President Eisenhower and those associated with him in the work of the National Manpower Council deserve the country's thanks for recognizing these problems and setting about the hard work of finding the vitally needed solutions."— *End.*

American engineer, Harry A. Kuljian, center, received glowing tribute from India's Prime Minister Nehru, right, at the dedication of the Bokaro Steam Power Plant near Calcutta.

Harry A. Kuljian: Engineer and Cosmopolite

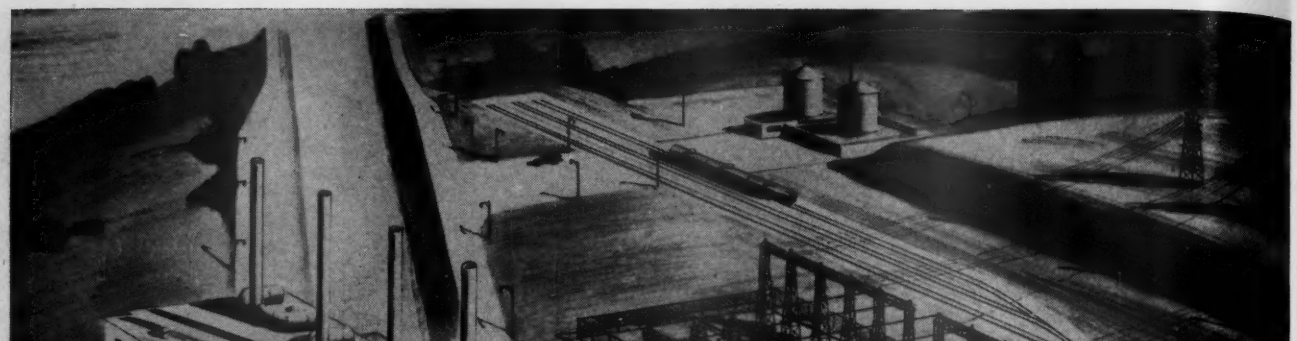
Meet a Man Who Has Chosen Technical Excellence and Professional Ideals As His Guideposts. Here's a Story With Inspiration *and Advice!*

At Bokaro, 200 miles northwest of Calcutta in India's rich Damodar River Valley, there is a huge new $35,000,000 steam power plant in operation, the first completed unit in Prime Minister Jawaharlal Nehru's Indian improvement plan. When the Prime Minister threw the switch on the first turbine generator during the dedication ceremonies last February 21st, he had at his side a United States engineer—Harry A. Kuljian, a distinguished member of both NSPE and the PSPE.

It was Mr. Kuljian's firm which was responsible for the design and construction of the Bokaro Power Plant, which is not only the largest in Asia but also the first major high pressure steam plant to be built in the Far East. The new plant was completed in record time; and, as he spoke in Bokaro, Mr. Nehru, who had virtually insisted that Harry Kuljian come from Philadelphia for the dedication, handsomely complimented the American engineering skill and efficiency that had contributed to the vital project.

An account of the plant's construction is worth a story in itself, but it is just one part of an ambitious program to provide the Damodar Valley with a $140,000,000 multipurpose power system, in many respects similar to the T.V.A. in this country. The Indian government, the World Bank—which lent $38,000,000—and American and Indian engineers are all sharing in the development. The Indian parliament inaugurated the project in 1948 by

Another view of the Bokaro Power Plant. Note the Indian, in lower right hand corner of photo.



A drawing of the Bokaro Power Station, first high-pressure steam-generating plant in the Far East. It is on the Damodar River in India.

Harry A. Kuljian demonstrates his new rayon spinning machine to Dean John E. Burchard of the School of Humanities, M.I.T.

creating the Damodar Valley Corporation on the T.V.A. model.

The four-fold purpose of the entire program is to control the flood waters during the monsoon season, cut land erosion, provide water for irrigation, and furnish electrical power for industrial expansion in what is one of the richest mineral areas of India. The region's hills, for instance, contain 85 per cent of the world's best mica, 75 per cent of India's coal deposits, most of its iron ore, and large deposits of manganese, copper, limestone, bauxite, asbestos, and chrome.

The Bokaro facility—designed by Kuljian Corporation engineers in Philadelphia, built by Indian personnel under the supervision of Kuljian's Calcutta office, and furnished for the most part with American-made equipment—involves three parts: the steam power station itself, the Konar Dam twelve miles from the plant which supplies cooling water, and a total of 477 miles of transmission lines and substations. An aerial conveyor will also supply coal at the rate of 700,000 tons annually from the nearby Bermo strip coal fields.

As part of the over-all program, personnel of the Damodar Valley Corporation are also building nine hydro-electric stations on various rivers flowing through the 330-mile valley. Jamshedpur, "India's Pittsburgh," is expected to make use of substantial amounts of power from the plants, and transmission lines will likewise carry power to Calcutta. Electricity from the Bokaro steam plant will carry the base load thirty-seven weeks of the year, and the hydro plants will take over the bulk of the load during the fifteen weeks of monsoon weather.

For its first year of operation the Bokaro plant will be under the supervision of Kuljian engineers, but thereafter its direction will be taken over by Indian engineers who have received intensive training in the United States with The Kuljian Corporation and with the General Electric Company which built three turbine generator units and eleven power transformers for the plant.

It is indeed a long way from Philadelphia to Bokaro, but Harry A. Kuljian is no man to be appalled by the thousands of miles thus involved. His name is also familiar

in Chile, Mexico, Venezuela, Italy, Spain, Japan, the Belgian Congo, and naturally, the United States. Of course, he runs a big operation. His offices—and there are a number of branches in addition to the Philadelphia headquarters in the famous old Widener mansion—are staffed by experts in many and varied phases of engineering and construction. The procurement and purchasing operation the Kuljian people perform, both for the actual engineering projects and for the American personnel scattered over the globe to carry them out, is almost a business in itself.

Yet it is much more than this technical efficiency and unerring operational skill that insures Harry Kuljian's world-wide reputation as a consultant, designer, and engineer-builder of the first rank. It is his ability and willingness to accept and understand the aims, ideals, attitudes and even the seeming "eccentricities" of people everywhere. In short, it is his grasp of the diplomatic approach.

He is greatly disturbed when he hears of American-directed jobs abroad being delayed or temporarily closed down because of misunderstandings between the stateside personnel and the native population. And too often, unfortunately, these misunderstandings are caused by American lack of respect or appreciation for particular foreign traditions.

MR. Kuljian feels that in many cases the American engineer tends to specialize too quickly so that, while becoming a leader in technology, he unhappily remains ignorant of important sociological and political facts. Thus, when the time comes for him to deal with persons with a background different than his own, even with the best intentions in the world he is apt to blunder to the distress of all and the detriment of the job he is trying to accomplish.

"The opening up of vast new opportunities all over the world," says Mr. Kuljian, "makes it essential for the American engineer to have a general education in world affairs, traditions, economics, and human relations. Otherwise he cannot cope with many of the problems he must solve in other countries—problems which go beyond purely technical matters. And right here in our own country our engineers are more likely to be good citizens and get more out of life if they have this general background education."

Because he is so concerned with this matter, Harry Kuljian has taken the positive action of donating funds for four annual $500 scholarships—two at M.I.T., his alma mater, and two at the Drexel Institute of Technology in Philadelphia. The purpose of the scholarship money is to help the student recipients defray expenses so that they will have enough capital and leisure to study the humanities in addition to pursuing their required technical courses. He hopes that others will also follow this example so that more and more young engineers will graduate with a deep sense of social responsibility as well as technical excellence, thus improving the over-all standards of the profession.

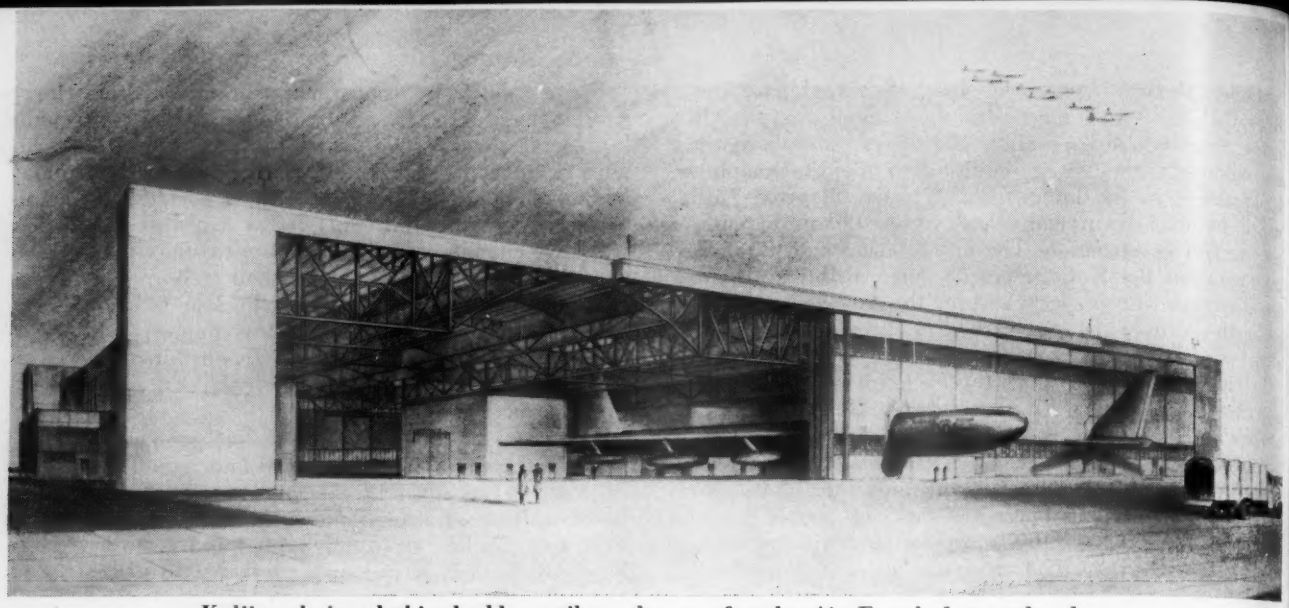
The cosmopolitan Mr. Kuljian has good cause to appreciate the value of international understanding because he himself was born in a small town in Armenia back in 1893. Because of his family's financial situation, at the age of twelve he had to quit school and go to work in a local textile mill. It was hard work for so young a boy, but the memory of it stayed with him and eventually was a factor contributing to his recent invention of a revolutionary rayon-spinning machine that has cut the usual four to five-day process involved in making rayon yarn down to approximately three and one-half minutes.

At the age of sixteen, with $85 he had saved from his earnings at the mill and another $25 as a gift from his family, he paid for a one-way steerage passage to the United States. He began his American career as a clean-up man in various lunch rooms and restaurants; then he graduated to the status of an elevator operator, which calling he followed in various New England hotels.

All the time, however, he was working in both day and night schools to complete his secondary education. Then when he had received his high school diploma, he went on to M.I.T. for a degree in engineering. He was employed as an engineer for various companies, including Stone and Webster, Westinghouse, RCA, and American Viscose, before going into business for himself and establishing The Kuljian Corporation, now at home in the rambling seven-story Widener house that retains many traces of the original millionaire owner and art patron with its marble floors, stained-glass windows, and spiraling stairways.

The principal activity for which the Kuljian organization was established was the designing and building of power plants of which it has now nearly seventy to its

Another view of the Bokaro Plant. This is the intake canal viewed from the Konar River, showing the plant in the background. On engineering jobs around the world, Kuljian has found that the engineer must not be ignorant of sociological and political facts.



Kuljian designed this double-cantilever hangar for the Air Force's largest bombers.

credit. Many other types of industrial facilities, however, including particularly chemical plants, oil refineries, airport facilities, paper mills, rayon and other textile plants, both in the United States and abroad, have also been engineered and built by the corporation under the leadership of Harry A. Kuljian as president and James L. Cherry, the executive vice president and also an NSPE member. Plants for the production of linoleum and building materials, for food processing, and for working metals and woods are among those that have been constructed to Kuljian design.

THE Kuljian method for textile manufacturing is being taken up by one of the largest rayon producers in Europe, the *Sociedad Nacional Industrias Aplicaciones Celulosa Espanola*, and the new spinning machines are to be manufactured and installed in the SNIACE plant at Torrelavega, Spain, which is one of the most modern in all Europe.

Another recent Kuljian-engineered development is a double-cantilever hangar, designed for the United States Air Force, which can be erected anywhere in the world to house the largest bombers now made and at the same time provide accommodations for the complete maintenance and repair of planes of any size.

Not very long ago the *New York Times* carried a story on Harry Kuljian in which the writer suggested that his firm might well be classified as among the "big six" in the field of industrial research and engineering. No doubt his name will be important around the world, from Philadelphia to Bokaro and back, for many years to come. And certainly there will be further special recognition of his engineering contributions, such as the certificate that was awarded to the corporation in 1951 in acknowledgement of its furnishing invaluable technical assistance to the Marshall Plan countries.

But the distances that the young Armenian immigrant has traveled have been far more than mere "geographic" ones, and he is proudest of and most concerned about the truly "professional" path that he and other engineers are taking. As Dr. James Creese, president of the Drexel Institute put it in accepting the Kuljian Scholarship Fund: "Our exports of technical skill will not give the best returns unless the men who go abroad have some sense of the part they play in history. The engineer's training needs to be deepened and broadened."

Harry A. Kuljian is one engineer who has already achieved that deeper and broader outlook, thus playing a pre-eminent role in the promotion and maintenance of the professional status of engineering.—***End.***

The Kuljian Corp. designed and built this plant for the Florida Power Corp. at Booth Point.

Basic Results of NSPE Salary Survey Released

First Figures Show 90% Earn More Than $5,600, 50% More Than $8,350, and That 10% Are in Over $17,200 Bracket

The first figures to be released in connection with the recent survey of income of the members of the National Society of Professional Engineers in 1952 indicate that 50% of those replying in this survey earned more than $8,350. This first tabulation also indicates that 90% of the professional engineers replying earned more than $5,620; 75% earned more than $6,640; 25% had an income of over $11,500; and 10% had an income in excess of $17,200. These are the first of a series of tabulations and comparisons which will be possible as a result of the salary survey conducted this spring by NSPE.

The return on this survey was most encouraging. Each member of the Society received a questionnaire and 12,443 were returned with sufficient information to be tabulated. In addition, there were several hundred questionnaires which were not completely filled out or for one reason or another could not be used. This is a total of well over 45% of the questionnaires forwarded and justifies the hope of the Salary and Fees Committee that the simple form would encourage members of the Society to reply.

The committee was conscious of the fact that income information of this kind would be most helpful if it could be secured on a continuing basis at least every two years. Because of the costs of conducting such a survey, and in the hopes that similar surveys might be conducted at frequent intervals in the future, it was felt that if basic information could be secured more frequently it would be of greater value than to secure complete information at longer intervals.

Secondly, it was hoped that by preparing a questionnaire which could be filled out quickly by the busy individuals to whom it was addressed, they would be encouraged to supply the information, thus giving more validity to the tabulations which would result.

It will be recalled that, as a result of these considerations, individuals were asked merely to indicate their 1952 income, the year in which they entered the profession, branch of the profession (such as civil, mechanical, electrical, etc.), duties involved (such as executive, design, sales, etc.), and field of effort (such as public utilities, industry, private practice, teaching, etc.) to which their major activity was devoted. In addition, they were asked to indicate the region of the United States in which they were most active.

From this information it will be possible for the ultimate report to present median figures for income by various years of entry into the profession according to branch, duties, and fields of activity.

Members also were asked to evaluate the work for which they are responsible in terms of the series of eight grades previously suggested by the committee. It will be possible from the replies to this question to indicate median salaries for various grades in the six major regions of the United States.

It will be appreciated that this series of tabulations and evaluations will take some little time in preparation, and it is probable that the complete report will not be available for several weeks. Notice of the release of the report on the survey will be carried in a future issue of the AMERICAN ENGINEER.

ENGINEER'S INCOME—1952

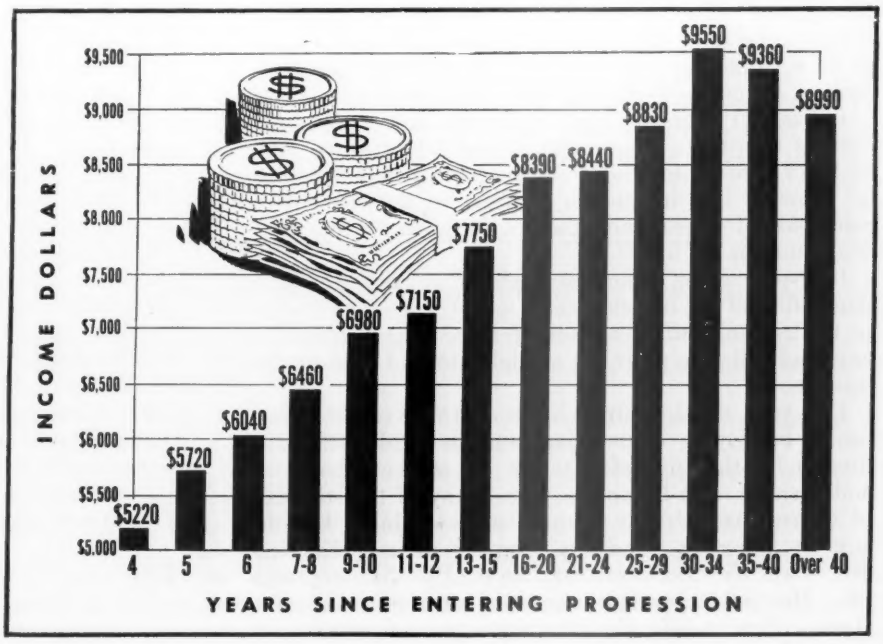
(All Replies)

●

90%	earned more than	$5,600
75%	earned more than	6,640
50%	earned more than	8,350
25%	earned more than	11,500
10%	earned more than	17,200

The above results were obtained in a recent survey of NSPE members. More interesting information on the project will be released in this magazine as tabulations and interpretations are completed.

Years at Work and Salaries Compared



From the above chart it is seen that the engineer's salary increases with experience until the peak is reached at 30-34 years at work. After this, the amount of money earned decreases.

A National Problem Strikes the Profession

We Must Keep Our Teachers

Edwin S. Burdell
President, The Cooper Union

As the Spring semester comes to a close, those of us who are responsible for the training of the coming generations of engineers can take satisfaction in watching our graduates once again go out to make real and definite contributions in their chosen field. The demand for new engineers, for thoroughly trained engineers, is well known. The seriousness of the engineering manpower shortage that has created and augmented that demand scarcely needs extensive reviewing here. It is discussed whenever and wherever engineers, educators, or industrialists and management specialists get together.

We worry aloud over how unsettled world conditions, the draft, and the Reserve Officer Training Corps program, which many engineering students have now joined, will aggravate the shortage either temporarily or permanently. But there is one consideration over which we have not done nearly enough worrying to date. That is the problem of how we can turn out even a minimum of qualified engineering graduates in the future when, one by one, our finest and most competent engineering teachers are being lured away from the campus by the obvious and ever-increasing attractions of industry and new graduates, for the same reason, decline to seek the advanced degrees the teaching profession requires.

Historically, it is doubtful that any educational institution has cooperated more wholeheartedly with industry than The Cooper Union of which I am president. Perhaps because the greater portion of its funds has come from a few sources rather than from many, it has been singularly aware of its obligation to industry and it has, through the years, turned much of its attention toward returning a measure of what it has received. Many instances of the adaptation of its training to meet industrial needs, both in science and art, highlight its chronicle.

It has, for example, been a pioneer in evening engineering education. Its courses were established in 1859 by Peter Cooper, inventor, iron-master, and philanthropist, to "provide free instruction at night in the elementary principles of science and their application to the practical business of life."

In these evening classes particularly we have a graphic illustration of the dependence of industry upon education to fill its ranks when we consider the large number of part and full-time positions available to and held by the students.

Last year, our Industrial Relations Office reports, companies employing engineering students made 610 part-time or full-time job offers to the 716 students, both day and evening, who began the year. Many of the students, of course, had already found their own jobs; but the number accepting the direct company offers (183 engineers) was 65 per cent greater than the 1950-51 acceptance rate. Most of the students accepting were in the evening classes, thereby affording themselves an opportunity to enrich their educational experience in the general area of their studies.

This, in itself is all to the good as practical experience and theoretical study are of course complementary facets of education in its broadest sense. However, when we take a closer look at this situation, we find something that is also quite dangerous.—Evening students at the Cooper Union School of Engineering are now earning so much that it is becoming extremely difficult to attract qualified men to teach them, and there is no reason to doubt that other engineering schools are facing the same problem.

Professor Herbert F. Roemmele, dean of students and also president of the New York Chapter of the New York State Society of Professional Engineers, has recently completed a survey showing that the average annual salary for our evening enginering students is $4,214. This is 8 per cent above the average a year ago and 30 per cent above the average two years ago.

Mechanical engineering students earn most with a $4,524 average, with civil engineering students next earning $4,116. The electrical engineering students' average yearly salary is $3,972, while for chemical engineers it is $3,876. Dean Roemmele's survey also shows that the average earning capacity increases proportionately as the evening students complete each year of study until after five years of instruction, as they enter their final year, the average annual income is $5,088.

A number of the evening students are earning $6,000 or more. The highest individual salary reported in the survey is $7,800. This amount is earned by two of our students, and it is no secret that it is considerably more than most engineering instructors are paid for teaching these young men. Indeed, it approaches closely the maximum salary ever paid teachers in most colleges.

The inequity of such a situation is obvious. When a man sees those whom he is teaching making far more than he does even before their student days are over, he naturally begins to wonder if he should not step over to the other side himself.

Another phase of this same problem is contingent on the summertime employment of engineering and other technical and scientific professors in industrial jobs. Great concern has often been expressed toward maintaining a professional teaching staff versed by experience in the situations that most of our students will find upon graduation. Summer employment of instructors has, therefore, been a practice long encouraged as one method by which both the engineering school and industry could benefit. Employment by industry on a full professional basis gives the instructor a chance to get the "feel" of industrial work and to acquire a sense of "belonging" with the members of his profession who are active in industry.

The material enticements of industry today, however, too often defeat this worthy objective by outshining the less tangible, though no less substantial, rewards of the laboratory and the lecture hall. One of our departments, for instance, has regretfully reported the loss of two excellent young instructors after a brief summer period in

the employ of firms in serious need of technical personnel. Each remained in the industrial position, attracted by salary offerings approximately 75 per cent greater than his Cooper Union earnings. These cases, unfortunately, are not isolated; similar ones appear with frustrating frequency in almost every department—and in virtually every other engineering school.

Without suggesting in any way that industry should begin to deflate engineering salaries, I do believe that industrial leaders should realize that their material inducements are draining away competent instructors and may, in the near future, aggravate the present shortage of engineers by curtailing our facilities for training through lack of teaching personnel.

To state it bluntly, education faces a new competitive challenge in industry's growing understanding and application of human relations. The doctrine that wages and fear of unemployment are man's only incentive is rapidly being superseded as we move into the second half of the century. Security and human dignity, once the chief justification of the low-pay scale of the teaching profession, are now to be found in industrial personnel policies and practices as fast as ways and means for providing them to workers can be discovered.

VIEWED selfishly, education is losing an important advantage in the essential business of attracting especially talented teachers and holding them in the face of industry's addition of these basic factors to its higher wage levels.

Today's concept of human relations in industry was formulated, adapted, and promoted in large part by such college professors as Frederick Taylor, Elton Mayo, Lloyd Warner, F. J. Roethlisberger, and others. It may very well be the outstanding example of education-industry cooperation of our times, and it is an achievement of which we educators are justly proud. But educational thinking must also be directed toward its own replenishment, and it needs the encouragement of industry to direct it toward this end.

The present heavy demand and competitive bidding for engineers in electronics offers another illustration of our predicament. Convinced that in industry lies the greatest opportunity, not one of our June graduating class of electrical engineering students plans full-time graduate study; each prefers instead to reap the immediate financial harvest. Two members with extraordinary scholastic standing and promise were approached with the suggestion that they apply for graduate scholarships. Neither, however, was willing to consider the suggestion seriously.

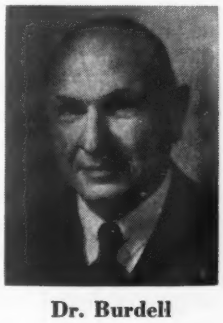
Thus, in addition to seeking means to retain our better instructors of long standing, we must also face the problem of finding new ways to persuade qualified graduates that teaching is rich in those satisfactions that are not visible on a balance sheet, as well as to make the professor's financial potential a little more promising and appealing.

The unsettled world political climate, youth's unpredictable military obligations, and the unconscionable length of time it takes to prepare for a professional career are, of course, additional contributing factors to our pressing problems. The eventual solution can only be reached through a forthright attack by leaders in both education and industry in a sincere form of cooperation, not affected by its tax-deductibility, and that attack is long overdue.

What that solution will be I cannot, of course, predict. Perhaps industry may find it advantageous to return to the colleges on a dollar-a-year or lend-lease basis some of the especially talented teachers who have been lured from the campus. There may be another avenue of escape yet to be suggested. It is up to each one of us—as engineers, as educators, as good citizens—to look earnestly for the answer. We cannot afford any further delay.—***End.***

About the Author . . .

Dr. Edwin Sharp Burdell, president of The Cooper Union since 1938, is a well-known educator and sociologist with an engineering background, having studied at M.I.T. as well as at the Harvard Graduate School of Business Administration and at Ohio State from which he received both his M.A. and Ph.D. degrees.



Dr. Burdell

He is known as an expert on housing problems and at one time served as vice chairman of the Board of Zoning Adjustment of Columbus, O., his home town. He has also won national recognition for his efforts to include broader cultural courses in the technical curriculum of engineering, and he was the first dean of the Division of Humanities at M.I.T.

He is an authority on adult education in Denmark and has received several honors from the Danish government for his contribution to Denmark's cause during the Nazi occupation and also in recognition for his activity in promoting cultural relations and exchange between Denmark and the United States.

NSPE Recognizes and Will Take Action on Problems Cited by Dr. Burdell

The trying times that our higher educational system faces today have long been the concern of the Society. In this regard, it is interesting to note the following recommendations of the National Education Committee, in its June, 1953, report:

I. The encouragement of the most able students to continue their study beyond the four-year undergraduate program, and in this way improve the total engineering ability of this nation.

II. That industry examine ways and means for co-operation with the engineering educational institutions in strengthening their staffs. This can be accomplished by:

- A. The employment of members of educational staffs for research work on a part-time basis.
- B. Stationing research personnel from an industrial organization on or near a college campus and making them available for limited teaching duties.
- C. Locating research laboratories on or adjacent to campuses with the understanding that a co-operative program is to be built up between the institution and the research laboratory personnel.
- D. Establishing salary scales in engineering colleges that will attract and hold the most effective teaching personnel . . .

Glennan's Suggestion Put Into Operation

ATOMIC FORUM IS ESTABLISHED

In November 1952, speaking in New York before the semi-annual meeting of the Manufacturing Chemists' Association, Dr. T. Keith Glennan suggested that an independent organization of business and other interests concerned with the non-military development of atomic energy should be set up to further the advancement of this energy source and the progress of the new industry created thereby. "What is needed here," said Dr. Glennan, drawing upon his official experience with the Atomic Energy Commission from which he had just resigned to resume the presidency of the Case Institute of Technology, "is something that comes up from industry, not down from the government — something that is based upon and can effectively demonstrate the serious interest and enthusiasm that industry has in and for atomic energy. This is the sort of job that can be done for industry only by industry itself."

Such an association, he stated, "should provide a forum in which industry might develop its best thinking in the interest of the advancement of the peacetime uses of atomic energy; a forum in which industry might develop an informed voice to be heard at governmental levels as new atomic energy policy is hammered out; a forum, not to serve the narrow interests of a few, but to stimulate the industrial development of atomic energy for the good of all."

Dr. Glennan's idea was received enthusiastically by leading businessmen and by engineers, scientists, and educators as well. Encouraged by this reaction, Walker L. Cisler, president of The Detroit Edison Company which is currently engaged with Dow Chemical and several other companies in an atomic energy project, decided to take positive steps to translate Dr. Glennan's proposal into concrete action. He initiated talks with the presidents of some forty companies engaged in atomic energy work and with leading scientists and educators. Meetings of the interested parties were held in New York in December and again in February; and, as a result, incorporation papers for the Atomic Industrial Forum, Inc.—an organization of businessmen, engineers, scientists, and educators — were filed with the Secretary of State in Albany, N. Y., in April.

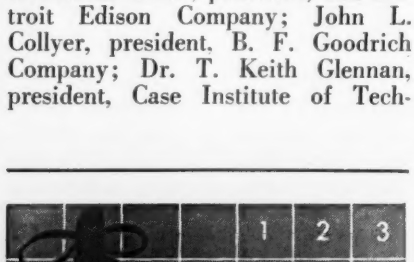
The purposes for which the Forum has been organized, according to the incorporation certificate, are: (1) To foster and encourage the development and utilization of atomic energy in accordance with the best traditions of American democracy and free competitive enterprise; (2) To provide a forum in which individuals and organizations may consult and cooperate in the resolution of problems relating to atomic energy which are of concern either to the nation, to industry, or to the public generally; (3) To promote the dissemination, to the extent consistent with national security, of knowledge and understanding relating to the development and utilization of atomic energy; and (4) To foster and encourage research and development relating to atomic energy.

Presidents or key atomic energy executives of thirteen corporations and institutions of higher education were named as directors of the group. The board includes: Albert L. Baker, chairman, Vitro Corporation and Vitro Manufacturing Company; Walker L. Cisler, president, The Detroit Edison Company; John L. Collyer, president, B. F. Goodrich Company; Dr. T. Keith Glennan, president, Case Institute of Technology; Dr. Frederick L. Hovde, president, Purdue University; Alfred Iddles, president, Babcock & Wilcox Company; John A. Martino, president, National Lead Company; John R. Menke, president, Nuclear Development Associates; Admiral Earle W. Mills, president, Foster-Wheeler Corporation; Dr. Mark E. Putnam, executive vice president, The Dow Chemical Company; Ross W. Thomas, vice president, Phillips Petroleum Company; Howard G. Vesper, vice president, Standard Oil Company of California; and J. B. Woodward, Jr., president, Newport News Shipbuilding & Dry Dock Company.

The Forum will seek, its founders state, a broad membership of all businessmen, engineers, scientists, educators, and others involved or interested in atomic energy as a new and promising industry. There will be two classes of members, with regular membership open to individuals who are lawfully entitled to access to any "restricted data" as defined in the Atomic Energy Act of 1946 and special membership open to individuals, corporations, associations, partnerships, and trusts which are now or expect to be engaged in research, development or operations in atomic energy. Only regular members will be allowed to vote or to serve on the Forum's Board of Directors.

The principal activity of the Atomic Industrial Forum will be in the field of information. It will sponsor meetings of interested persons for the discussion of atomic energy problems. It will encourage, according to a recently issued statement, the widest possible understanding of this energy and its use among the technically trained or those who are in the process of learning the technology. Also, because atomic energy is of great concern to every individual, the Forum plans to conduct an information program aimed at increasing the general knowledge in this field, and it will engage in the publication of material on atomic energy and encourage publication by others.

Policies will be established by the Board of Directors, and an executive director will be employed to supervise the Forum's activities. Present headquarters of the Forum are in the Engineering Societies Building at 29 West 39th Street in New York City.—*End.*



(EDITOR'S NOTE: *All those desiring to list their meetings under Dates to Remember should send* COMPLETE *information, including date and place, directly to the American Engineer.*)

Nevada Society of Professional Engineers — Annual Meeting, June 1. Ranchinn, Elko, Nevada.

California Society of Professional Engineers—Annual Meeting, June 4, 5, 6. Hotel Californian, Fresno, California.

Georgia Society of Professional Engineers—Seventh Annual Summer Outing, June 15, 16. King and Prince Hotel, Saint Simons Island, Georgia.

National Society of Professional Engineers—Annual Meeting, June 18, 19, 20. Sheraton-Beach Hotel, Daytona Beach, Florida.

West Virginia Society of Professional Engineers—Annual Meeting, September 25, 26. Daniel Boone Hotel, Charleston, West Virginia.

BLS To Survey Future Demand For Chemical Engineers

During May, June and July of this year, Bureau of Labor Statistics representatives will be visiting selected firms in the chemicals, rubber, and petroleum industries in connection with a study of the factors affecting the demand for chemists and chemical engineers in industry. The study is being made at the request of the Department of Defense.

"Although the gravity of the scientific manpower situation is widely recognized," Ewan Clague, Commissioner of Labor Statistics, said, "no adequate information exists on the current and prospective demand for scientific personnel. Such information is needed by the Government in planning scientific research programs and in developing policies with regard to Selective Service deferments and call-up of reservists. Professional societies and persons responsible for vocational guidance of students and veterans likewise need additional data on personnel requirements in scientific fields. This information would also assist private companies in appraising their plans with regard to technical manpower."

The Bureau's pilot study will make a start in supplying the needed information. Plans for it were developed in cooperation with officials of many companies, Government agencies, and professional societies. The Manpower Committee of the American Chemical Society has expressed its support of the project.

The Bureau plans to interview officials of a number of companies to obtain appraisals of how their companies' requirements for scientific and technical personnel are determined. To make possible a statistical analysis of the factors influencing short-run and long-range demand, data will also be requested on employment of chemists, chemical engineers and technicians, and on such factors as research expenditures.

(*Editor's Note*: For more on the seriousness of the technical manpower shortage, see the news story on page 27 referring to the report of the National Manpower Council).

Letters

(*Continued from page* 5)

grees. One contract even provides that the employer will pay annual membership dues for the employee in any engineering society of his choice—a positive program for keeping the engineer technically abreast of his profession.

Although the article states in several instances, and, in fact, almost pleads, that management must do something about the present unhappy lot of the engineer, no environment for management is recommended that will produce the desired results. Management, engineering or otherwise, has been given the business reins by the stockholders to make a profit. This means keeping down costs, and engineers' salaries are costs. The only practicable approach for engineers to employ is the one that has worked so successfully for the trades and shop employees—that is collective bargaining. Collective bargaining can be used not only to achieve economic advancement, but also professional advancement.

The article also expresses concern that perhaps democratic processes are too slow and indecisive in these troubled times for the engineering profession. ESA does not agree.

I sincerely hope that this letter will aid in clearing the air on some of the issues raised in the article.

JOHN E. TAFT, Vice President,
Engineers and Scientists
of America,
Minneapolis, Minn.

Spring Bouquet . . .

Dear Editor:

. . . While I think this publication has improved substantially during the last year or so, the May, 1953, issue is outstanding in excellence, and you deserve great credit for such an achievement. Not only are the major articles well selected and suitably illustrated, but the numerous matters which call for but a paragraph or a box, are well handled and properly placed.

Although I am a retired engineer, the AMERICAN ENGINEER gives me a great lift with all its information about the good work which is going on.

More power to you.

RICHARD S. BICKNELL, P.E.,
St. Petersburg, Fla.

Women in Engineering . . .

Dear Editor:

Quote from page 9 April AMERICAN ENGINEER: "—after a weeding-out process, the BLS analysis was ultimately restricted to the questionnaires returned by some 55,000 of the nation's experienced senior engineers, admitted to full professional membership in their respective organizations. . . . The largest age group represented was from 35 to 49 years, with more than half of the respondents fitting into this span. The median age was 45, whereas 1949-50 estimates for the entire profession set it as under 40. There were only 56 women among the 55,000, showing very small headway made to date in their employment in the engineering field."

May I make a comment? With the median age of 45 the women would have received engineering degrees about 25 years ago. It would seem that the headway is being measured only from 25 years ago and not during the period 1928-1953.

May I ask two questions? What headway has been made in the employment of women engineers during the past 25 years? What part has the National Society of Professional Engineers taken in this progress?

LUCILE B. KAUFMAN, P.E.,
Asst. Prof.,
Arizona State College,
Tempe, Arizona

► For answers to both of Reader Kaufman's questions, attention is directed to NSPE's recent survey of 500 leading industrial firms. The survey, published under the title. "How to Improve the Utilization of Engineering Manpower," (available from NSPE), includes a section on women in engineering. It would seem that much progress have been made in the hiring of women inasmuch as the survey showed that 65% of the firms would hire women if available; 45% have found it feasible to use women engineers; and 23% now have women on their staffs. As to NSPE's part in furthering the use of women engineers, space limits a detailed answer, but it can be pointed out that more than 7,000 copies of the report quoted above have been distributed gratis or sold to industry and government. It is hoped that the optimistic report on the use of women will help to break down any prejudices that may still exist. For further information on this subject, Reader Kaufman should contact the Society of Women Engineers, 4 Washington Square North, New York, N. Y. —*Editor.*

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Ohio Engineers and Architects Work Together

By A. C. NEFF, P.E.,
Former National Director, Ohio SPE, and Chairman, National Publications Committee, NSPE

A determination to foster goodwill and confidence and enhance the standing of both professions in the mind of the public has brought the architects and engineers of Ohio together in a working organization.

Instigated by the NSPE Ethical Practices Committee Report of December 1949, the first step toward this organization was made in March 1950 when George Voinovich, then President of the Architects Society of Ohio, was invited to address the Annual Meeting of the Ohio Society of Professional Engineers. Choosing as his subject, *Opportunities for Improved Co-operation Between the Architectural and Engineering Professions,* he outlined the many ways in which each profession can supplement the work of the other, in professional and public relations.

In October 1950, President George W. Clark addressed the Annual Meeting of the Architects Society of Ohio on the subject, *Birds Of A Feather.* He traced the common origin and the common heritage and objectives of the two professions as well as the reasons for mutual confidence and respect which should exist between the members.

Informal discussions between President Voinovich and President Clark brought out the need for a working organization which would be the meeting ground for representatives of the two professions. Accordingly, in October 1950, the first meeting of the Ohio Architect-Engineer Joint Committee was held.

Officers and Past Presidents of the two Societies composed this first Committee. It was mutually agreed that, for the first few meetings, all efforts of the Committee would be directed to projects on which there was general agreement. Matters on which friction might exist were deferred until all members became better acquainted and had become accustomed to working together.

George Clark, representing the Ohio SPE, receiving the gavel as the new Chairman of the 1953 Joint Committee of Architects and Engineers, from George S. Voinovich representing the Architects Society of Ohio, retiring chairman.

Meetings have been held every three months through 1951 and 1952. Membership of the Committee is composed of six men from each of the Societies appointed for three year terms. The Chairmanship alternates each year between members of the two professions.

All members of the Joint Committee recognize that it cannot settle any matters by itself. It serves solely as a meeting ground from which ideas and programs are carried back to the parent Societies for adoption or disapproval.

The Joint Committee also works with the Architects' and the Engineers' Registration Boards on certain occasions.

Principal matters of discussion thus far have been:

(a) Form of contract for Architects and/or Engineers doing professional work for the State of Ohio.

(b) Legislative programs of the two Societies in the forthcoming Ohio General Assembly. Each Society will discuss its plans fully with the Sister Society before the matter is presented to the Assembly.

(c) Joint activities of the two professions to induce The Ohio Department of Industrial Relations to require the signature and seal of a registered architect or engineer on all plans submitted for its approval.

(d) Fee schedule to be used when Architects retain Engineers, or vice versa, to do professional work.

(e) Revisions to State of Ohio Building Code.

(f) Problems of the overlapping of the activities of some of the members into fields of the other profession are being fully studied. Limitations of the professional activities of men registered as "Architectural Engineers" are being particularly explored.

After two years of mutually satisfactory work together, it was decided to prepare a brief statement of Policy and Rules of Operation of The Joint Committee. The following Statement and Rules have been ratified by both parent Societies.

STATEMENT OF POLICY FOR THE ARCHITECT-ENGINEER COMMITTEE

Organized under the auspices and by the authority of:

THE ARCHITECTS SOCIETY OF OHIO AND THE OHIO SOCIETY OF PROFESSIONAL ENGINEERS

A. The primary objectives of this committee shall be to:

1. Foster mutual good will and confidence among members of the professions of Engineering and Architecture.
2. Cooperate in activities which will enhance the position of the two professions in the public mind.
3. Cooperate in activities which will stimulate and protect the two professions in the proper performance of their duties.
4. Support each other in activities which may benefit one or both.
5. Reduce annoying friction in the border of over-lapping activities.

B. These objectives shall be attained by collecting necessary data, assimilating and discussing these data, and preparing resolutions for action by the respective sponsoring Societies. The Committee shall not have authority to act for either Society.

C. When conditions warrant, the deliberations of the Committee shall be confidential among the members of the Committee.

RULES OF OPERATION
ARCHITECT-ENGINEER COMMITTEE

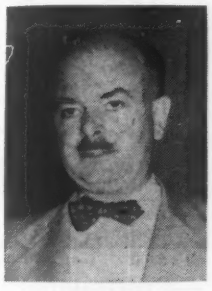
1. The Committee shall be made up of 6 members in good standing from each of the sponsoring societies, to serve for a period of 3 years.
2. In January of each year, the President of each Society shall appoint 2 members in good standing from his Society to serve for a period of 3 years.
3. At the last meeting of each year, the Committee shall elect a chairman and a vice-chairman, one from each Society, and a secretary, to serve for the following year. The chairmanship shall alternate annually between the component societies.
4. The vice-chairman shall preside as chairman in the chairman's absence.
5. The Committee shall meet at Columbus at 10:00 on the first Friday in January, April, July and October, except that the date and time of each succeeding meeting may be set by agreement at any of the meetings.
6. Notice of the meeting shall include the agenda for the meeting, give the time and location of the meeting and be mailed to each member of the Committee not later than one week prior to the called meeting.
7. Sub-committees may be appointed by the chairman and vice-chairman upon the recommendation of the Committee, from members of the two Societies not members of the Committee, to gather data and report their findings and recommendations to the Committee for action. These sub-committees shall be dissolved upon the completion of their assigned tasks.
8. A permanent committee file shall be maintained including minutes of all meetings and written reports of committees.
9. Expenses incurred in preparing and sending the minutes of meetings, reports, etc., shall be borne equally by the two Societies.

Although under some pressure from individuals in both professions who attempt to fan flames of animosity, the Joint Committee has maintained an objective and judicial attitude in its deliberations. Each profession has learned to respect the other's viewpoint and problems.

Two years' experience in working together give every indication of a long and useful life for the Joint Committee of Architects and Engineers in Ohio.

About the Author . . .

A. C. Neff, P.E., the author of this article, is vice-president of Armco Drainage and Metal Products, Inc., Middletown, Ohio, and is presently serving as the chairman of NSPE's Publications Committee. He is a past National Director from Ohio and a former president of both the OSPE and the Cleveland SPE.



Mr. Neff

Mr. Neff is a graduate of the Case School of Applied Science in Cleveland, from which he received his B.S. in Mechanical Engineering in 1925. Before joining the Armco staff in 1944, he was assistant city engineer for East Cleveland, 1925-29, and Cleveland manager for the Ohio Corrugated Culvert Company, 1929-44.

He has an outstanding record of activity in connection with civic and professional programs.

Manpower Council Makes Recommendations

Fourteen recommendations aimed at easing the nation's "brain power" shortage and continuing effective study and analysis of the problem were made to President Eisenhower on May 18 by the National Manpower Council. The fourteen-point program was included in the Council's 263-page report, *A Policy for Scientific and Professional Manpower,* just published by the Columbia University Press.

"Only a purposeful and sustained effort can insure that the United States will have adequate resources of scientific and professional manpower to meet its needs," the Council declared. "Neither reliance upon a single course of action nor the pursuit of separate and unrelated policies will enable the nation to attain this goal." Private, institutional, and governmental action will be necessary to increase the number of doctors, engineers, scientists, nurses, teachers, and other skilled civilians needed by the United States for the cold war era, the Council said.

Increased support from local governments and private groups for educational institutions, intensification by management of its efforts to utilize its manpower most effectively, the appointment of a Presidential commission to determine the effect of government research and development contracts on the primary responsibility of educational institutions to advance fundamental knowledge, and a review of legislation and procedures pertaining to the recall of reservists were among the measures recommended.

James D. Zellerbach, president of the Crown Zellerbach Corporation, San Francisco, is chairman of the National Manpower Council which was set up in 1951 by President Eisenhower, acting in his capacity as president of Columbia University, under a grant from the Ford Foundation.

(*Editor's Note:* This is a significant book and it offers some first, sound steps that can be taken by the nation. It suggests where additional research and evaluation must be made before balanced judgement can be reached, and it makes specific recommendations for action. This book is well worth reading in its entirety, but busy *American Engineer* readers will find a "Special *American Engineer* Report" on the subject in the July issue).

Professional POSTSCRIPTS

—Professional Postscripts—intends to bring you pieces that other professional engineers have written, or outstanding material engineering magazines have published. Here is an editorial from the Ohio Society's magazine sent in by the group's popular Executive Secretary, Lloyd Chacey. What do you think of the problem?

—PP—

Second only to his basic responsibility for the proper determination and relation of facts, the exercise of sound engineering judgment is the obligation and the prerogative of the individual engineer and of the engineering profession as a whole. The technical training of the engineer, combined with his professional experience acquired through years of practice either will qualify him for the proper exercise of judgment in his own field, or else he will have no right to be considered a member of a profession. Unless his integrity be accepted and his judgment respected by those whom he serves, then he is a mere mechanic rather than a professional person.

If the above be acceptable as engineering principle it would be well for the members of the Ohio Society of Professional Engineers and for all engineers who enjoy the privilege of professional stature in Ohio to consider carefully the course of the current litigation involving the selection of construction materials for the Ohio Turnpike. At the time this writing appears in print the case brought against the Ohio Turnpike Commission will still be pending before the Ohio Supreme Court, having been carried there on appeal by the Commission from a decision of the Second District Court of Appeals.

The decision of the Court of Appeals has the apparent effect of superimposing the judgment of the bar upon recommendations made by the engineers of the Commission, which recommendations the Commission had studied, accepted and adopted. The decision if sustained by the Ohio Supreme Court would appear to establish a principle of law in Ohio under which engineers in the field of public works could find their decisions based upon professional judgment challenged by selfish interests and subjected to judicial interpretation.

It is submitted that this is a matter of concern and significance to every engineer. Consider, if you will, the reaction of any other learned profession if the basic principle of its professional judgment were to be attacked similarly.

The above is not a "call to arms," but is intended to direct attention to a situation which threatens the prestige of the engineering profession.

—PP—

We are proud to print below an original item written at our request by the well-known educator, Mr. Harlan Hatcher, President of the University of Michigan at Ann Arbor. President Hatcher writes succinctly about some of our basic problems as engineers. It will only take you minutes to read the comments on the profession by an outstanding University president and it will be time well spent.

—PP—

Writing in this engineering medium, I am reminded of the road not taken. I just missed being an engineer myself.

My grandfather was a civil engineer. My first paying job was as a rodman on one of my grandfather's surveying parties in eastern Kentucky. I became chainman, transit man and chief of party. I helped pay my expenses through high school and college by surveying for railroads and coal mines in Kentucky, running levels on the Midland Trail, and making a city map of Ashland, Kentucky. And during my college days I was Junior Assistant Sanitary Engineer of Franklin County, Ohio, in charge of topographic surveys of the drainage area around Columbus.

I feel I should disclose these facts not because they qualify me to write here with authority, but to show that I do write with some understanding and sympathy.

The engineers are doing a pretty thorough job of remaking our world. We common citizens have trouble keeping up with them.

We are acutely aware of this here at the University of Michigan. Our College of Engineering was founded at Ann Arbor one hundred years ago this autumn. Under Dean Geo. Granger Brown's direction, we will have a big celebration of this centennial early in the fall, and we will dedicate the Cooley Memorial Building, the first in the new engineering unit development on the North Campus.

The engineer is touching every aspect of our lives, and whatever he touches he alters, transforms, or upsets. He gets interested in internal combustion engines, and every mayor and most of the citizens of the nation have to wrestle with the parking problem. He constructs airplanes and atom bombs, and adds a new dimension to the world uproar.

But what about the engineer as an administrator? That is a nice question, and I have a few observations to make on it.

Despite some notable, even conspicuous, examples, engineers have not been uniquely qualified in the field of administration unless their great personal gifts have fitted them for it naturally. Their training has been against it. It should be the other way around. For engineers, as much as, perhaps more than, other professional men, are schooled to find out promptly and accurately how a thing can be done, not why it cannot be done.

But the very nature of his traditional training has tended too much to narrow him. The scope of the profession—the heavy demands which its technical requirements place upon him—tends always to drive the engineer toward the expert technician and away from the broader field of social results and human factors which must be of central concern to the administrator.

I am happy to see the engineering schools recognizing this fact and grappling with the problem. This is a big and very important subject. I would like to comment briefly on just three phases of it.

The first one is communication. I have seen fine boys who attained high competence in their chosen field of engineering who were stultified in their growth and their usefulness because they could not write a decent, much less distinguished, report on a

project, and who were tongue-tied and halting in their attempt to make an oral presentation before a board of directors. They are the boys who thought that English was a waste of time in high school and college, and who dreamed of hiring a good secretary to see that their writing was clear, precise, well-organized and cogent. I have heard these men urge me, with tears in their voices, to try to improve the training in the use of this fundamental and indispensable tool. Without a reasonable mastery of it, a man can neither be a great administrator nor reach his full capacity as an engineer.

The second phase is this field of social understanding. Business should never have allowed itself to be placed in the defensive position in which it has struggled during the past two decades. It has been falsely accused, and it has been suffering for the sins of its fathers. Engineering has transformed this country from an overwhelmingly rural people and economy to an overwhelmingly urban people and a manufacturing economy. Everything the engineers have touched has had instantaneous effects upon our peoples. They must be aware of these pressing facts and take cognizance of them. The time to begin is in the period of college training. No administrator can avoid these implications.

And the third item is human relations. This means the frame of mind of employees, their readjustments to the changes which the engineers make year by year, if not month by month, in their processes of labor and the nature of their lives. It means the people as a whole whom the engineer serves. The engineers are not dealing with machinery alone, but with machinery in the lives of more and more people.

I count it a hopeful sign of greater understanding that, for instance, in the vast plans for industrial installations in once remote and forbidding black Congo Africa, businessmen, engineers, health and sanitation experts, and so forth, are joining together to recognize and solve the problems of the violent impact of engineering on a new geographical area. This is good administration.

—PP—

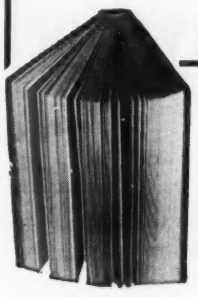
When we received in the mail the following item from Educator H. G. Thuesen, P. E., of the Oklahoma Institute of Technology, Stillwater, the title made us a bit wide-eyed. It reads "Engineers and Monkeys," but it's all very harmless. Some good thoughts here, though.

(*Continued on page* 30)

A complete reference manual

in ***general route engineering practice***

—with special emphasis on problems and methods in location and planning of highways and railways.



THIS compact field and reference manual presents principles and procedures dealing with the full scope of problems in transportation route location, including particularly highways and railways. Especially stressed are those computations, tables, and formulae which are known to be of greatest service to the field engineer in his layout of curves. Over 260 pages of tables, each closely checked for accuracy, include standard tables and many that are new and original with this book.

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1. *Transportation Systems*—Controlling factors, railroads, highways, airways, canals, pipe lines
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5. *Transition Spirals*—Notation and formulas, theory, functions, types, problems, and procedures
6. *Curve Superelevation* — Banking, length of highway spiral, railroad spiral, special problems
7. *Widening Highway Curves* — Methods
8. *Sight Distances on Highways* — Stopping, passing, along horizontal and vertical curves, at underpasses
9. *Earthwork*—General, area of cross sections, volumes, haul and overhaul
10. *Drainage Surveys and Facilities*
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Postscripts

(*Continued from page 29*)

A party of engineers were in a jungle on a survey. During the early evening they had left the campfire to see a nearby waterfall. On their return they were amazed to see a group of monkeys dancing about their campfire with great enthusiasm and glee. The monkeys were watched with great interest by the engineers and were the center of interested discussion on simian intelligence and society until the fire burned out and the revelers left.

Said one engineer, "They" meaning the monkeys, "were practically of human intelligence in their appreciation of the fire."

Said another engineer, "I am unimpressed by either their intelligence or their appreciation. Did you notice that not one had either the intelligence or the appreciation to throw a single stick or twig on the fire?"

Said a third engineer, "I was just thinking of that. It makes me a little self-conscious. How like that are some engineers. We enjoy the fruits of our profession, but we contribute all too little to its up-building and so are in danger of being regarded as monkeys by the public we serve."

—PP—

We all have a dash of Whitman in us, we suppose, and H. B. Nelson, P. E., of Urbana, Ohio, is no exception. In a poetic mood one day, Engineer Nelson set down in verse some of the things that bother many of us. Here it is.

—PP—

This is written to relate
Of the existence of a sorry state,
And if possible to acquaint
The American Public, with some constraint.

The much coveted title of "engineer"
Is misunderstood far and near,
Not to mention the flagrant abuse
Uttered by the ignorant and obtuse.

Prior to the existence in this nation
Of the American Medical Association,
Would-be doctors committed assassination
Due to lack of qualification,
License to practice is now required
Doctors without it have been retired.

We all know how judges are
With reference to lawyers not passing the bar,
For charging a legal service fee
Would be an illegality.

Most states in this nation
Now require registration,
Which includes examination
Of all with "engineer's" aspiration.

Yet every Tom and Harry decide
That they are du'y qualified,
Although laws of our state
Frown on those who impersonate.

* * *

In every locomotive window then
Are seen the operating enginemen,
Who were never asked to create
The engine which they operate.

* * *

While such routine functions as these
Are part of the "engineer's" life if you please,
All of these things the engineer sees
With much wonderment at the glib ease
With which the would-be engineers
Have so aptly assumed these years,
While he oft has sweated blood and tears
To earn the title of "engineer."

Annual Meeting Program Provides Top Professional and Gay Social Events

Program

Wednesday, June 17, 1953

9:00 A.M. Executive Committee Meeting ..... Daytona Room A
4:00 P.M. Registration ..... Hotel Lobby

Thursday, June 18, 1953

8:00 A.M. Registration Desk Opens ..... Hotel Lobby
9:00 A.M. Professional Meeting ..... Ocean Room
Presiding—John D. Coleman, P.E., *President*
Invocation—Rev. Jack L. Davis, Community Methodist Church
Welcome—Hon. Jack Tann, *Mayor,* City of Daytona Beach.

President's Report	Social Security Coverage
Treasurer's Report	Engineers in Armed Services
Executive Director's Report	Other National Legislation
Unionization of Engineers	

12:15 P.M. Luncheon ..... Marine Dining Room
Presiding—N. W. Dougherty, P.E., *Vice-President,* Southeastern Region
Address—Joseph Weil, P.E., *Dean,* College of Engineering, University of Florida, "Carrying on the Profession's Responsibilities through Industrial Research"
Florida State Board of Engineer Examiners as Guests
Sam P. Turnbull, P.E., *President;* Joseph Weil, P.E., *Secretary;* Wylie W. Gillespie, P.E.; Oliver J. Semmes, Jr., P.E.; J. Wylly Keck, P.E.

2:15 P.M. Professional Meeting, *continued* ..... Ocean Room
Presiding—J. D. Coleman, P.E., *President*

Public Relations	Engineers' Week
Engineer-Management Research	Utilization of Engineers
Work with Registration Boards	Engineers Creed
Registration Reciprocity	Ethical Advertising
Enforcement Procedures	Telephone Listings
Rules of Ethical Conduct	

8:00 P.M. Fellowship Hour ..... Ocean Room
Meet Engineers and their wives from other parts of the nation!

Barber Shop Singing
An Engineer's Picture of the Yucca Flats Atomic Explosion
L. L. Dresser, P.E., *Past President,* N.S.P.E.

Friday, June 19, 1953
Morning Session

7:30 A.M. Regional Breakfasts
Northeastern Region, Daytona Room A
C. T. Shoch, P.E., *Vice-President,* Presiding
Southeastern Region, Daytona Room B
N. W. Dougherty, P.E., *Vice-President,* Presiding
Central Region, Daytona Room C
E. W. Seeger, P.E., *Vice-President,* Presiding
North Central Region, Marine Dining Room
C. Y. Thomas, P.E., *Vice-President,* Presiding
Southwestern Region, Marine Dining Room
T. C. Forrest, Jr., P.E., *Vice-President,* Presiding
Western Region, Marine Dining Room
W. D. Williams, P.E., *Vice-President,* Presiding

8:00 A.M. Registration Desk Opens ..... Lobby

9:00 A.M. Professional Meeting, *continued* ..... Ocean Room
Presiding—John D. Coleman, P.E., *President*

Inter-Professional Relations	Engineers-in-Training Work
Engineers in Government	Employment Practices
National Defense and Engineers	Salary Surveys
Conservation of Natural Resources	Salary and Fee Schedules
Engineering Education	Chapter Activities
Young Engineer Activity	Dues Adjustment

Afternoon Session

2:00 P.M. Leave for Marineland (Marine Studios), or
Leave for Ponce de Leon Springs
Golf at Ellinor Village Country Club

2:00 P.M. Florida Society of Professional Engineers
Board of Directors Meeting ..... Daytona Rooms A, B & C
(Open also to F.S.P.E. and N.S.P.E. membership)

7:00 P.M. Fish Fry ..... Hotel Cabana Colony

Saturday, June 20, 1953

Morning Session

8:00 A.M. Registration Desk Opens ..... Lobby

9:00 A.M. Annual Meeting ..... Ocean Room
Presiding—William D. Williams, *Vice-President,* Western Region
Invocation—Rabbi Henry Okolica, Temple Beth Israel
"Programs for Professional Advancement," Alex Van Praag, Jr., P.E., *Past President,* N.S.P.E.; N.S.P.E.'s representative on Exploratory Unity Committee
"N.S.P.E.'s Development of Professional Objectives," Perry Ford, P.E., *Past President,* N.S.P.E.; *Chairman,* Committee on Evaluation of Objectives
"The Professional Development of Engineers and Scientists in Industry," Clark Ransom, P.E., General Electric Co.
"The Place of Registration in Professional Development," Karl B. McEachron, P.E., *Past Chairman,* Massachusetts Registration Board for Professional Engineers
"Unity—N.S.P.E. and E.J.C.," Clarence T. Shoch, *Vice-President,* N.S.P.E., and Robert Allen, *National Director,* Ohio

12:15 P.M. Luncheon
Presiding—C. T. Shoch, P.E., *Vice-President,* Northeastern Region
Address—"Little Things Count," Dr. Frank Goodwin, *Professor of Marketing,* University of Florida

Afternoon Session

2:00 P.M. Annual Meeting, N.S.P.E. ..... Ocean Room
Presiding—T. Carr Forrest, Jr., *Vice-President,* Southwestern Region
"The Challenge to N.S.P.E.," John D. Coleman, P.E., *President,* N.S.P.E.
Business Session

2:00 P.M. Annual Business Meeting, Florida Society of Professional Engineers (Parallel Session) ..... Daytona Rooms
Presiding—Stanley Warth, P.E., *President*

Saturday, June 20, 1953

Evening Session

7:00 P.M. Annual Banquet ..... Marine Dining Room
(*Engineers and their ladies*)
Presiding—John D. Coleman, P.E., *President*
Invocation—Monsignor Wm. J. Mullally, St. Peters Church
Bethune-Cookman College Choir
Introduction of Guests
Introduction of New Officers
Presentation of N.S.P.E. Award
Recipient—Charles F. Kettering, P.E.
Address—Charles F. Kettering, P.E.

9:30 P.M. Dancing (Dress Optional) ..... Ocean Room

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(For more information see back cover)

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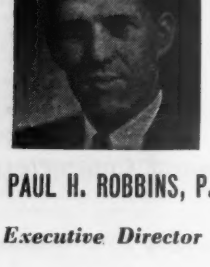


BY PAUL H. ROBBINS, P.E.

Executive Director

N.S.P.E.

THE term "public relations" has come to be a blanket under which many activities are covered. Actually, in its broad concept it might be argued that all professional activity of a non-technical nature lies in the realm of public relations. Particularly is this true if we interpret public relations to mean an effort to influence the opinion of a particular cross-section of our national economy. We could argue that our liaison with government, our Congressional testimony, and even our membership programs fall within the realm of public relations.

More specifically however, particularly as public relations has developed in NSPE, it has had two principal objectives. The first is to inform the public of the contribution of engineers toward this better way of living we are now enjoying. Unfortunately for the engineering profession, there has developed an evaluation of the contributions of the profession in terms of its works. People think of engineering in terms of great buildings, great bridges, huge power plants, improved transportation, easing the load of the housewife, and similar engineering developments. Only in the past few months has there begun to be an appreciation that there are minds and individuals directly responsible for these improvements.

It is in this direction that a part of the NSPE public relations effort is devoted. Of course, everyone realizes that to carry on any extensive program in this direction costs a great deal of money and NSPE's limited funds do not permit this. However, NSPE does have another great asset that it can mobilize, and that is its 28,000 members in 325-odd communities throughout the country.

Concentrating this mobilization in one week during the year, National Engineer's Week for the past several years has been an outstanding success. More people undoubtedly have recognized the amount of engineering they call upon daily in their rounds of activity and the individuals who make it possible than has ever before been the case.

The second big public relations activity is with the users of engineering services. The brainpower of their engineers represents a very valuable commodity, they should be encouraged to study carefully their procedures in utilizing it.

Toward this end have been directed the special Executive Research Surveys in NSPE. It will be recalled that these surveys were developed with the guidance of the Professional Engineers Conference Board for Industry. Their preliminary studies indicated that NSPE could be of assistance both to engineers and to industry via a series of surveys on four very pressing problems. Two surveys have been completed to date—the first on the matter of engineering-management communications, and the second on how to improve the utilization of engineering personnel. The wide distribution given these reports, the universal commendation they have received, and the extensive reviews and publicity resulting from the reports undoubtedly have been beneficial to the members of the profession.

The first report clearly pointed out a need on the part of management to set up and facilitate two-way communication: for management to explain to its engineers some of its activities and its objectives and what it hoped to accomplish via engineering, and for engineers, in turn, to talk with management concerning ways and means in which, from their knowledge and experience, the users of engineering services could better facilitate their work.

The Second Report, being particularly pertinent because of the current high demand for engineers, had many specific illustrations of ways in which industry is improving the professional status of engineering employees. By using subordinate personnel, by reorganization of engineering staffs, and by other techniques industry has been able to permit greater professional responsibility for the qualified engineers, as well as secure gerater rewards from the professional services of their engineers.

Thus is NSPE attempting within its limited facilities to meet its Public Relations Responsibilities.—*End.*

With Our Members . . .

Annual Meetings

New York and Michigan Societies Report Outstanding 1953 Conventions

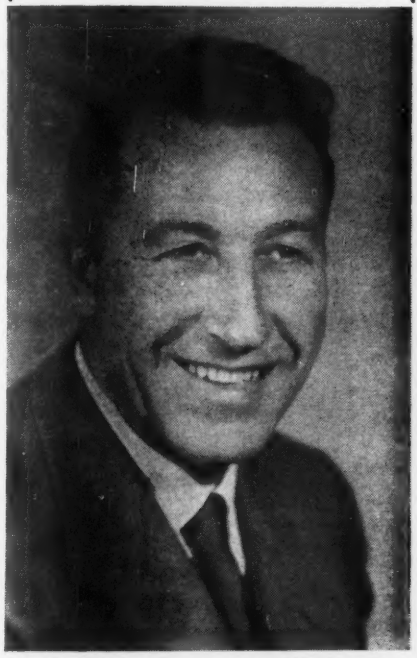
From the East and Middle West come reports of two very successful State Society Meetings, at which numerous professional problems were considered and nationally-known speakers addressed the engineers, their wives, and guests in attendance.

At the Michigan SPE meeting, held at the Hotel Bancroft, Saginaw, Mich., Dr. D. B. Steinman was the principal speaker, talking on *The Straits of Mackinac Bridge*, which is to be built to his design. Human relations in engineering received special attention with William Grose and Lloyd Rowe, both of The Dow Chemical Company, giving addresses on phases of this important subject. Other convention speakers included: Dean Granger Brown of the College of Enginering, University of Michigan; Charles M. Ziegler, State Highway Commissioner; E. W. Seeger, NSPE Central Area Vice President; Dr. Wm. D. Shroger, University of Michigan; and Major Robert McMahon.

Engineers attending the New York State SPE's 27th annual meeting at the Hotel New Yorker in New York City, heard a welcoming address by Mayor Vincent Impellitteri. Main speaker for the event was Major Alexander P. de Seversky who chose *Peace Through Air Power* as his subject. NSPE President John D. Coleman and Max H. Foley, a partner in the architectural and engineering firm of Vorhees, Walker, Foley & Smith, also made major addresses. A number of forum discussions on various professional topics, moderated by outstanding public figures, were additional highlights of the meeting; and a fine industrial exhibit drew many admirers.

Both the Michigan and New York meetings featured social programs as well as the more serious sessions.

Minnesota Prexy



Pictured above is W. L. Hinderman of St. Paul, the newly-installed president of the Minnesota Society of Professional Engineers. He assumed office May 1, succeeding Charles E. Doell as head of the very active MSPE.

San Jacinto Group Hears Atomic Lecture

The Atomic Age, a nontechnical discussion of atomic energy, was the subject of a lecture delivered at the May meeting of the San Jacinto Chapter, Texas Society of Professional Engineers. Dr. Tom Bonner, a nuclear physicist with Rice Institute, was the speaker; and senior engineering students of both Rice and the University of Houston attended as guests of the chapter.

Program On Planning For Monmouth-Ocean P.E.'s

The May meeting of the Monmouth-Ocean Chapter of the New Jersey Society of Professional Engineers featured an outstanding program on municipal and county planning. Herbert H. Smith, chief of the Planning Section, New Jersey Department of Economic Development, was the guest speaker, choosing as his topic *Why Have a Planning Board?*

Representatives from the municipalities of Matawan, Pine Beach, Dover Township, Freehold, and Little Silver were guests of the engineers, and a question and answer period followed the talk.

John Ernst of Toms River is the president of the Monmouth-Ocean Chapter.

California Chapters Offer Varied Programs

Members of the California SPE have been preparing for and looking forward to the State Convention scheduled for June 4-6 in Fresno, with the Fresno Chapter P.E.'s as hosts. In addition, a number of interesting pre-convention programs have been reported by various local groups.

Engineers of the Pasadena Chapter recently heard Hans J. Lang, project engineer of C. F. Braun & Co. of Alhambra, discuss *South Korea—Its Economic and Industrial Potential.* Mr. Lang spoke authoritatively, having participated in a nine-months' survey of South Korea in 1949 with other economic and industrial specialists under the sponsorship of the South Korean government with the guidance of ECA.

Los Angeles Chapter members have reported a recent informative lecture by E. H. Schreiber on the *TD-2 Microwave Relay System.* The annual membership dinner meeting was a highlight on the San Jose schedule for May, and the Peninsula Chapter held its annual business meeting during the same month.

Meteorologist Addresses Western Wis. Chapter

A. D. Saniel, U. S. Weather Bureau meteorologist, was the main speaker at a recent dinner meeting of the Western Chapter, Wisconsin SPE. Mr. Saniel reviewed the history of the Weather Bureau and gave an account of its present activities. He pointed out in the course of his lecture that approximately 5,000 people throughout the country serve without salary as volunteer weather observers, making reports each month on daily temperature recordings, rainfall, and other data.

Schenectady Annual Dinner

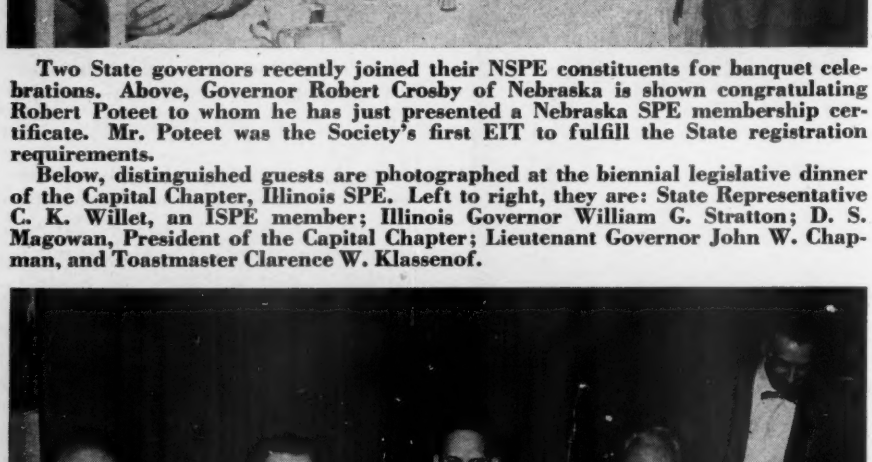
The Schenectady Chapter, NYSSPE, recently held its annual dinner at the Hotel Van Curler, with chapter Vice President E. W. Hutton acting as toastmaster. Dr. Dana L. Farnsworth, medical director at the Massachusetts Institute of Technology, was the featured speaker. He was introduced by Dr. Harold Bibber of Union College.

E. J. Remsheid is president of the Schenectady Chapter.

When Engineers and Governors Meet

Two State governors recently joined their NSPE constituents for banquet celebrations. Above, Governor Robert Crosby of Nebraska is shown congratulating Robert Poteet to whom he has just presented a Nebraska SPE membership certificate. Mr. Poteet was the Society's first EIT to fulfill the State registration requirements.

Below, distinguished guests are photographed at the biennial legislative dinner of the Capital Chapter, Illinois SPE. Left to right, they are: State Representative C. K. Willet, an ISPE member; Illinois Governor William G. Stratton; D. S. Magowan, President of the Capital Chapter; Lieutenant Governor John W. Chapman, and Toastmaster Clarence W. Klassenof.



Massachusetts SPE Meets In Boston

The members of the Massachusetts Society of Professional Engineers held their Annual Meeting May 9th at Boston's Hotel Kenmore. Current MSPE accomplishments and plans for the future were the main topics for discussion among the assembled P.E.'s who "hope to step out and perform a real service for New England engineers."

Philip W. Swain, the editor of *Power,* was guest speaker for the event, which also featured an address by NSPE President John D. Coleman. A social program was also provided for the engineers and their wives in attendance.

Pennsylvania SPE Holds Eighteenth Annual Meeting

The Penn-Harris Hotel in Harrisburg, Pennsylvania, was the scene of the Eighteenth Annual Convention of the PSPE on May 15-16. Congressman Walter Judd (R., Minn.) was the featured speaker at the Saturday evening banquet. Other speakers included: NSPE President John D. Coleman, Executive Director Paul H. Robbins, Vice President C. T. Shoch, and Maynard M. Boring of General Electric.

A special highlight of the meeting was an inspection visit to Olmsted Air Base, where members of the Society had a chance to observe the reconditioning of jet engines.

Ohio P.E.'s Hear Many Fine Lectures

Reports from various chapters affiliated with the Ohio Society of Professional engineers show a wide variety of lecture topics. At a recent meeting of the North Central Chapter, Dr. C. B. Meuser, Director of Civil Defense and Ashland County Health Director, discussed civil defense problems and prospects. Members of the Franklin County Chapter recently heard George B. Foster, vice president and technical director of the Industrial Nucleonics Corporation, Columbus, described the use of radioactive isotopes in balancing automobile tires as well as other potential industrial applications of radioactivity.

Other interesting Ohio programs included E. T. Cross's talk on *The Air Lift Construction of the Labrador Railroad* at the May meeting of the Springfield Chapter, Henry K. Leonard's discussion of patent problems before the Lorain County engineers, and OSPE President Charles P. Smith's address at the May dinner meeting of the Mahoning Valley P.E.'s.

P.E.'s At Work

NSPE member Wilfred C. Hugli has been promoted to the post of Assistant Director, Plans and Coordination, for the Experimental Towing Tank Laboratory of the Stevens Institute of Technology, Hoboken, N. J. . . . Robert O. Bradley has been appointed Director of Engineering at the Toledo Scale Company, Toledo, O. . . . Harry Ebert has resigned as Business Manager of the Austin (Tex.) State School to join the Defense Research Laboratory of the University of Texas. . . . John Weber, formerly Vice President of the Travis Chapter, Texas SPE, has moved his consulting business from Austin to Abilene. . . . Clarence H. Ax, Vice President of the St. Louis, Mo., Chapter, has joined the staff of Vollmar Bros. Construction Co. . . . Robert C. Findlay is the new Assistant Manager of the Fenestra Building Panel Division, Detroit Steel Products Company. . . . Gordon B. Carson, secretary and engineering manager of the Selby Shoe Co., has been named Dean of the College of Engineering at Ohio State. . . . J. T. Ryan, Jr., is the newly-elected president of the Mine Safety Appliance Company, Pittsburgh, Pa. . . . Stanley J. Johnson has been named Chief Engineer for Greer & McClelland, consulting foundation engineers of Houston, Tex., and Montclair, N. J.

Professional Directory

Alphabetically Arranged by States . . . *. . . Colorado-Michigan*

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Directory Continued on Next Page . . .

Missouri SPE News

The Missouri SPE's State Membership Chairman, E. W. Butler of St. Louis, has called on every presently active member to sign a pledge to bring in at least one new member before the end of June. The importance of the membership campaign is also being emphasized by President G. H. Dyer in speaking before the meetings of the various chapters.

The Executive Survey Report on the utilization of engineering manpower was the subject discussed at the May 21 meeting of the Western Chapter in Kansas City; and numerous professional problems constituted the subject of MSPE Past President E. W. Carlton's talk before a meeting reported by the Ozark Chapter.

A. A. Farnham presented slides illustrating the engineering problems involved in sinking a mine shaft at a late Lead Belt Chapter gathering; and Central Chapter members recently heard Howard Doane of Doane Agricultural Service, St. Louis, speak on engineered farm buildings, also illustrating his lecture with slides.

Many MSPE engineers attended the dedication of the new Chain-of-Rocks Locks and Canal near Granite City on May 9, and several St. Louis Chapter members served on the Dedication Committee. Major General S. D. Sturgis, Jr., Chief of Engineers, made the principal address at the ceremonies.

Delaware Engineers Hear Cost Reduction Lecture

Members of the Deleware SPE, meeting for dinner on May 20 at LePore's Restaurant in Dover, Delaware, heard Pierre W. Hoge, a special assistant in the Control Division of the du Pont Company, as guest speaker. Mr. Hoge's lecture was entitled *Cost Reduction as Practiced by the Engineering Department of the du Pont Company.*

The Society's regular Annual Meeting is scheduled for June 11 at Hanna's Restaurant in Wilmington. Highlight of the evening will be the installation of new officers selected by balloting late in May.

Calumet Engineers Hear Railroad Lecture

Members of the Calumet Chapter of the Indiana Society met recently in the Marshall House, Gary, Indiana, to hear John K. Wheeler, vice president of the Burlington Railroad and a colonel in the U. S. Army Engineer Corps, discuss rail transportation and the continuing role that it plays in the economic stability of the country.

Legislation Discussed Before Blacksburg Chapter

Members of the Blacksburg Chapter, Virginia SPE, assembled recently in the cafeteria of the Celanese Corporation plant at Pearisburg, Va., to hear two State legislators discuss current laws affecting enginers. Delegate John Whitehead and Senator T. Dalton, both of the Sixth District, were the legislative guests, and M. L. Tyrell of the Celanese Corporation acted as moderator for the panel discussion.

J. R. Abbitt is president of the Blacksburg Chapter.

Want to Get in On Top Professional Discussions, and Enjoy the Florida Sunshine While Doing It? Attend the Annual Meeting, Daytona Beach—June 18-20, 1953.

Professional Directory

Alphabetically Arranged by States . . . *. . . Michigan-New Jersey*

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Twenty-Nine Years

Distinguished Guests Attend Meeting; Awards Presented by New Jersey P.E.'s

Celebrating twenty-nine years as a professional group, members of the New Jersey SPE held their Annual Meeting at Newark's Essex House recently. Among the distinguished guests who attended as convention speakers were: Vivien Kellems, President, The Kellems Co.; Earl G. Planty, Executive Counselor of Johnson & Johnson; Harry B. Horne, Jr., of Reaction Motors, Inc.; and Frederick H. Dechant, Chairman of the Board, Frederic R. Harris, Inc. In addition, Professor Philip Kissam of Princeton University, an NJSPE member, and Raymond P. Wilson of the Raritan Valley Chapter, a specialist in municipal engineering, addressed the Land Surveyors' Session of the Meeting.

Special NJSPE Honorary Awards —one for outstanding achievement in professional engineering, the other for outstanding achievement in the field of medicine and rehabilitation of the physically handicapped—were presented by the P.E.'s to Bayard L. England and Dr. Henry H. Kessler, respectively.

New Jersey President Louis F. Frazza presided at the meeting, for which Bergen County Chapter members acted as hosts. E. A. Crawford is President of the Bergen group. And F. F. Hohnholt acted as general chairman of the convention committee.

Albany Chapter Helps Vacation Planners

In addition to taking part in the Albany (N. Y.) Chapter's annual business meeting on May 19, the members and their wives who attended were treated to a showing of a sound film in technicolor exploring New York vacation spots. Mrs. Grace L. Hudowalski, Travel Bureau Supervisor, Division of State Publicity, N. Y. State Department of Commerce, and wife of chapter member Ed Hudowalski, also spoke on the vacationland theme.

Outgoing President Maurice Roses presided at the business session.

Niagara County Chapter Installs New Officers

The Niagara County Chapter of the New York State Society held its final meeting of the 1952-53 season at the LaSalle Yacht Club on May 12. Dinner was served prior to the chapter's annual business meeting.

The installation of new officers for the coming year was the featured event of the evening. The new slate is as follows: William F. Anderson, President; Samuel S. Blackmore, Vice President; Edmund C. Wanner, Secretary; A. Robert Fowler, Treasurer; and Elton L. Burmaster, John R. Wesel, and Arthur H. Prey, Directors.

Toledo Chapter Honors Past Presidents

Past presidents of the Toledo Chapter of the OSPE were honored recently at a special dinner meeting at the Elks Club. NSPE President John D. Coleman was the featured "Presidents' Night" speaker. Bronze plaques were presented to former officers being honored by Charles E. Hatch, OSPE trustee, who served as toastmaster for the occasion.

Professional Directory

Alphabetically Arranged by States . . . *. . . New York-Pennsylvania*

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Directory Continued on Next Page . . .

D. C. Engineers Report Annual Meeting

The District of Columbia SPE held its Annual Meeting and dinner on May 25 at the Continental Hotel in Washington. John D. Coleman, NSPE's president, was the guest speaker at the banquet. In addition, Paul S. Dell'Aria, president of the District P. E.'s gave a review of the Society's accomplishments during his tenure.

News From Kansas

The Topeka P.E.'s met jointly with members of the Eastern Chapter recently to hear Richard F. Brown, head of the general development branch of the Spencer Chemical Co., speak on *Necessary Requirements for the Successful Development of a New Chemical Industry*. Mr. Brown is a member of the Southeastern Chapter, KSPE.

Members of the Wichita SPE saw two sound films furnished by the Bethlehem Steel Company at another recently-reported meeting. The movies were *Ropes of Steel*, showing the manufacture of steel cable, and *The Open Road*, depicting road construction in which steel is used.

Investment Lecture For Monroe County P.E.'s

Alfred Sproat, senior vice president in charge of the Earning Assets Division, Lincoln Rochester Trust Company, spoke on the subject of *Investments* before a recent meeting of the Monroe County Chapter, NYSSPE. His topic was one of those most frequently suggested in a recent survey made by the chapter to determine the wishes of its members in regard to programs. The meeting was held at the Hotel Rochester.

At another recent Monroe County meeting Dr. Neal Bowman addressed the engineers and their guests on *A Blueprint for Survival*. His speech dealt with the dangers of socialistic inroads in the private enterprise system.

Alabama Officers

Left to right above are the following officers of the Alabama Society of Professional Engineers: Leonard W. Peterson, National Director; John C. Heslip, First Vice President; H. K. Weaver, President; Robert H. Wallace, Treasurer; and Kenneth A. Thigpen, Secretary. Second Vice President L. B. Freeland was not present when the photo was made.

Professional Directory

Alphabetically Arranged by States . . . *. . . Pennsylvania-Tennessee*

ELLIS M. LANDIS
REGISTERED ENGINEER

Machine and Product Design and Development
Tool Design
Special and Automatic Machinery
Contemporary Redesign

226 S. 52nd St., Philadelphia 39, Pa.

GANNETT FLEMING CORDDRY & CARPENTER, INC.
Engineers

Water, Sewage, Roads, Turnpikes,
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HARRISBURG, PA.

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Pittsburgh, Pa. Medellin, Colombia, S. A.

LAWRIE & GREEN & ASSOCIATES
Architectural and Engineering Offices

321 N. Front Street
Harrisburg, Pennsylvania

Ritchie Lawrie, Jr., P.E., Consulting Engineer

LOEDDING ENGINEERING CO., INC.
Consulting, Design and Detail

Industrial and Commercial Planning
Bridges, Structures of all Types
Material Handling
Conveyors, Gantry, Overhead and Jib Cranes
Reinforced Concrete and Foundations
Industrial Piping and Ventilation

Economy Bank Building, Ambridge, Penna.

MODJESKI AND MASTERS
Consulting Engineers

G. H. Randall — F. M. Masters — J. R. Giese
C. W. Hanson — H. J. Engel

Design and Supervision of Construction
Inspection and Reports
Bridges, Structures and Foundations

State St. Bldg., Harrisburg, Pa. — New Orleans, La. — Philadelphia, Pa.

POTTEIGER COMPANY INC.
Builders for Engineers

328 Tulpehocken Ave., West Reading, Pa.

CYRUS WM. RICE & CO., INC.
Consulting Chemical Engineers
Industrial Water and Waste

16 Noble Avenue, Pittsburgh 5, Penna.

EMERSON VENABLE
Chemist and Chemical Engineer

Chemical Analysis
Research — Development
Trouble Shooting

6111 Fifth Ave., Pittsburgh 32, Pa.

JOHN J. MORAN
Consulting Engineer

Communications Exclusively
Accounting — Appraisals — Financing - Rate Cases
Engineering of Communications Systems—Additions — Rehabilitation — Maintenance —Relocation of existing systems and associated apparatus and installations.

605 N. Maple St., Cookeville, Tennessee

. . . Restricted to Registered Professional Engineers

T. Carr Forrest Speaks In Dallas

NSPE's president-elect, T. Carr Forrest, Jr., was among the speakers who addressed some 250 Dallas, Texas, high school students at the annual Engineers' Vocation Dinner held at the Baker Hotel. The purpose of the dinner was to interest the young men in engineering as a career and also to present Dallas Engineers Club and Dallas Petroleum Engineers Club scholarship awards won by some of the youths.

Elgin B. Robertson, national president-nominee of the American Institute of Electrical Engineers and also an NSPE member, presided at the dinner. T. A. Boyd, research consultant with General Motors in Detroit, gave the main address.

Chattanooga Engineers Meet With Architects

Members of the Chattanooga chapters of the Tennessee Society of Professional Engineers and the American Institute of Architects have been taking part in a series of joint monthly meetings. The purpose of the arrangement is to promote mutual understanding among the members of the two professional groups and insure joint planning and participation in furthering the safety, progress, and welfare of the community.

K. E. Hapgood is president of the engineers, and J. G. Gauntt heads the architects.

Cleveland Sponsors Program For New P.E.'s

The May 14th meeting of the Cleveland, Ohio, SPE was highlighted by a presentation ceremony during which 103 new engineers who had recently passed the State examination received their registration certificates. Judge Donald F. Lybargar of the Cuyahoga County Common Pleas Bench administered the Professional Engineers' Oath, and Thompson F. Hindman of Lakewood, a member of the State Board of Registration, presented the certificates.

Dr. J. Elliott Janney, partner in Rohrer, Hibler & Replogle, Cleveland management consultants, and a prominent psychologist spoke on *Some Observations on Successful Engineers.*

James E. Atchison, president of the Cleveland group, presided at the meeting.

With the Ladies

By MRS. WILLIAM J. FELL
Chairman, NSPE Ladies' Advisory Committee

Members of the Auxiliary to the Arkansas SPE have had a rewarding first year's work. Their news page, *The Feminine Perspective*, edited by Ernestine McDonald, auxiliary president, has appeared regularly in the *Arkansas Professional Engineer* magazine. Mrs. Eugene Nelson, a writer of note in Arkansas, will be the new editor of the page this year.

The annual report of the Auxiliary to the Travis Chapter, Texas SPE, reveals a year's program full of community service as well as social activities. These ladies have placed a book, *Engineering as a Career*, and current copies of the *Texas Professional Engineer* in the library of the Austin high schools; and they have voted to carry this activity further next year by placing books and other materials which might aid students to consider engineering as a career in the other junior and senior high schools of their chapter area which covers eight counties. Members of the auxiliary have also assisted with Community Chest and Red Cross drives.

Professional Directory

Alphabetically Arranged by States . . . . . . Tennessee-Texas

YOKLEY and WAGGONER
Consulting Engineers

Airports, Roads, Sewerage, Structures, Soil Mechanics, Design, Supervision, Surveys

1123 Church Street Nashville 3, Tennessee

THOMAS E. DUCE ASSOCIATES
Consulting Engineers

Electrical and Mechanical

Murray Building
1733 S. Brownlee Blvd., Corpus Christi, Tex.

ENGINEERS
TESTING LABORATORY, INC.

FOUNDATION AND
SOIL MECHANICS INVESTIGATIONS

Soil Borings Laboratory Tests
Foundation Analyses Reports

3313 Main Street Houston, Texas

JOHN W. MEDLIN
Consulting Engineer

Design of special machinery, materials handling systems, piping. Plant Layout.

4116 Yoakum Houston 6, Texas

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HERE'S WHY!

- **A Double-Length Article on the Aircraft Industry**
- **A Photo Story on the famous and packed - with - engineering, Smithsonian Institution**
- **The Introduction of NSPE's New President, Texan T. Carr Forrest, Jr., and other Officers**

Pan American Highway

(*Continued from page* 13)

antimony, zinc, manganese, mica, nickel, quartz crystals, rubber, tin, tungsten, and industrial diamonds.

Furthermore, as the highway is being completed, access roads and interconnections are also being constructed, opening up new areas and resources for the engineer to develop. One such spur road that will contribute to the general development of an entire region is the Rama Road from San Benito on the Inter-American Highway in Nicaragua, 165 miles east to Rama, a village at the head of navigation on the Escondido River 60 miles inland from the Caribbean port of El Bluff. The United States is cooperating in the construction of this highway, not as a part of the Inter-American Highway project itself, but to satisfy a wartime executive agreement which supplemented a long-standing treaty between this country and Nicaragua. The fact that this Rama Road, now more than half finished, will permit the movement of persons and goods across Central America from the Caribbean to the Pacific, at a new location which will become a limited alternate to the existing line of communications through the Canal Zone, has great importance.

THIS again brings us to the third thing that the completed Inter-American and Pan American Highway systems can achieve—namely, the immeasurable strengthening of the defense positions of the two continents. World War II was basically a war of transportation, and no one doubts that the safety of transportation routes will be an even greater factor in any future world conflict, should such an unfortunate calamity come to pass. The shipping difficulties that had to be overcome during the last War, even in the Caribbean area, are well known, and it is also no military secret that highway transportation is much less vulnerable to attack than that by sea or railway. Limited port facilities, enemy-infested waters, and the fact that there can be no substitute for skilled sailors nor substantial and immediate salvage of sunken cargoes all contribute to the relative inefficiency of the sea lanes in times of great danger. As the world shrinks before jet planes and trembles before atomic and hydrogen bombs, it obviously becomes more important than ever that the Americas have a good, accessible, all-weather land link among themselves and that the United States have a clear route through friendly nations to the Panama Canal.

Of course, no one would be foolish enough to suggest that the mere completion of the Inter-American and Pan American Highways will bring an immediate solution to all our hemispheric problems. Nevertheless, I feel that it is not too much to say that this whole series of Latin American road programs gives promise of meaning more in the building of Pan American understanding and good will, as well as hemispheric solidarity and security, than any other single development that has occurred since the American republics won their independence.

Highway engineers and planners, builders of sturdy roads and staunch bridges seem to understand the same language even though they do not speak the same mother tongue. The rest of us will do well to give their efforts our continued and hearty support.—***End.***

Marvin C. Nichols Is Reclamation Nominee

A prominent NSPE member, Marvin C. Nichols of Fort Worth, Texas, has been selected by Secretary of the Interior Douglas McKay for the post of Commissioner of the Bureau of Reclamation, and his name has been submitted to President Eisenhower for approval.

A partner in the Fort Worth engineering firm of Freese and Nichols, the nominee is a 1918 graduate of the University of Texas, and he also holds a master's degree in civil engineering from the University of Illinois. Professionally he has specialized in municipal development, and he has served as adviser to several Texas counties. He has been active in civic affairs and is a past president of the Texas Society of Professional Engineers.

The office of Commissioner of Reclamation is one of the most important in the Interior Department since it is concerned with construction and administration of water power and irrigation projects in seventeen Western states.

Mr. Nichols' appointment would return the post to an engineer, the last Commissioner — Michael W. Straus, who resigned in January — having been a former newspaper man.

Engineer Nichols describes himself as a "basically conservative Democrat" but gave Eisenhower his support in the recent election. The appointment is dependent upon presidential approval only and does not require Senate confirmation.

Looking for New & Better Ways of Doing Things? Check Progressive *American Engineer* Advertisers!

What's New

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NEW VOLT-AMP TESTER

Item 1

The Amprobe Junior, a new snap-around volt-amp tester built to do a specific job at low cost, is now being introduced by the Pyramid Instrument Corp. The Amprobe Junior is a *snap-around ammeter* which measures current instantly without shut-downs or ammeter connections. It is a *voltage meter* which gives an accurate voltage reading without guesswork on a full-size 1.8" calibrated scale. Combines ruggedness of a tester with the accuracy of an instrument.

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ELECTRIC LEVEL FOR ROAD BUILDING

Item 2

A new type of electronic angle measuring instrument for use on motor graders and other types of road building equipment has been introduced by the Electro-Level Corp. Called Stewart's Electric Level, the device consists of two separate units—the protractor level head and the lighthouse. In operation the light panel instantly records any change in elevation through the blinking action of three bulls-eye lights, permitting the operator to make required adjustments instantly.

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PAIN-KILLING BURN TREATMENT KIT

Item 3

Davis First Aid Burn Kits now include an Aerosol automatic spray dispenser containing Americaine, pain-killing burn treatment. Announced by Davis Emergency Equipment Co., Inc., Kit also contains Americaine in the form of a greaseless, water soluble ointment. Americaine in both forms is antiseptic, greaseless, excludes air and kills pain almost instantly. Kit also contains an assortment of bandages and compresses.

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NEW LOW-COST DIGGING-LOADER

Item 4

A versatile new digging loader known as the TERRALOAD'R, announced by American Tractor Corp., has many features not usually found in industrial equipment in lower price range. Particularly popular with builders and contractors. Can be used to load trucks and railroad gondolas, dig trenches and grade as a bulldozer. Can carry loads from the site of one activity to another. Hydraulic lift and control valve permits a float position for efficient handling of loose materials.

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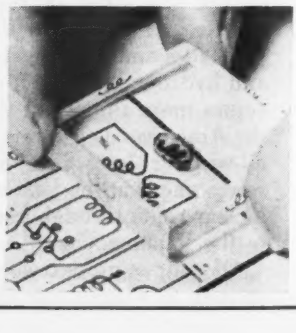
TRANSPARENT DRAFTING STAMP

Item 5



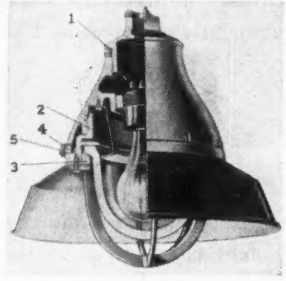
A draftsman's stamp of transparent Plexiglas has been developed by John Griffin Co., for stamping conventional symbols on engineering drawings. Transparency permits user to orient a symbol on stamp with existing lines on drawing.

For breakage resistance and lasting transparency, Plexiglas acrylic plastic is used. Available in 124 different engineering symbols, in accordance with ASA standards. Stamp is 1¼" square and 5/16" thick.

This column describes new products of general interest to professional engineers. For further information, fill in the coupon provided and mail to the AMERICAN ENGINEER.

NEW EXPLOSION-PROOF LIGHTING FIXTURE *Item 6*

This explosion-proof lighting fixture, just introduced by Crouse-Hinds Company, has 5 to 10% greater lighting efficiency manufacturer states. Reason for designing new fixture was to improve threaded connections to prevent liquids, vapors or dirt from entering bulb and receptacle areas. Points 1 through 5 were improved. Point 2 is threaded high up inside hood to prevent leakage into lower section.



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WINDOWS CLOSE FOR RAIN; REOPEN WHEN CLEAR *Item 7*

Homes, offices and factories can now have windows which close when it rains and reopen as soon as the rain stops—all without human intervention, according to the manufacturer, Micro-Moisture Controls, Inc. Actual closing and opening is performed by small electric motors, activated by relays connected with small printed-circuit grids installed on building exteriors. As rain strikes a grid, mechanism instantly operates. When clear, windows open automatically. Can be regulated to any degree of moisture.

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AUTOMATIC WATER CONTROL *Item 8*

New Flo-Matic Automatic Shut-Off Water Control Valve, for home, farm and industrial use, protects lawns and gardens; controls filling of tanks or vats. Used for golf courses, green houses and small irrigation systems. Couples to any standard threaded faucet. Automatic shut-off. Useful for farmers' stock watering. 6" long, 2¾" wide and 2¼" high.

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NEW TYPE RIPPER FOR BULLDOZERS *Item 9*

A new type ripper for bulldozer blades is announced by Preco Inc. The Preco Dozer-Ripper unit clamps onto front of Caterpillar 8S and 7S bulldozers. Adjustable to rip depths of 22", 15", or 8", or fully retractable. One or two can be used on the same blade. Claimed unusually effective for rough confined dozing, pioneering, steep downhill dozing, bank sloping, and breaking blacktop and light concrete. Replaceable tooth and shank made of heat-treated chrome molybdenum steel. 650 pounds.

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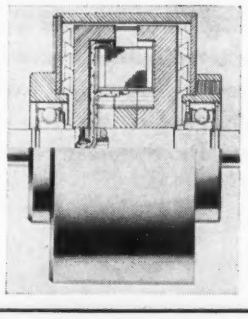
MAGNETIC PARTICLE CLUTCH *Item 10*

Clark Manufacturing Co. announces successful development of the Magnetic Particle Clutch. The Clark Dynamatic Drive is a complete innovation in magnetic clutches because it replaces unstable iron particles with stable particles of stainless steel. Its great value lies in its simplicity of design, lack of wearing parts, fast response, full range of torque transference from zero to full capacity, easy adaptation to remote control and smooth operation.



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Strictly Business

Ground was broken near Pittsburgh, Pa., recently for a factory that will build parts for atomic power plants. Believed to be the first privately-financed atomic manufacturing plant, the multi-million dollar facility will house the newly-formed Atomic Equipment Department of the Westinghouse Atomic Power Division.

The third engineering office of The Babcock & Wilcox Company to be located in the State of Florida within the past two years will be opened in Miami, according to Glen J. Schoessow, executive assistant of the company and chief engineer at its Barberton, Ohio, works. The two previously opened offices are at St. Petersburg and Tampa.

Industrial distributors of America have been building huge inventories of materials and parts, worth hundreds of millions of dollars, that "stand as a reservoir against the effects of strikes, other interruptions and even against the effects of an atomic bomb itself," the York Report says in its April issue. "No matter what basic production facility would be wiped out by enemy action, the supplies in the hands of industrial distributors and their counterparts, the regional warehouses maintained by large manufacturers, would tide production over until we caught our breaths and organized for the long pull to victory," the Report adds. The York Report is a newsletter for business executives published by the York Engineering & Construction and York-Gillespie Manufacturing companies of Pittsburgh.

The rapidly increasing pressure on industry to come up with more exact answers to complex engineering, research and production problems is focusing more and more attention on the development and application of electronic measuring equipment. In this connection, it is interesting to note that William E. Denison, President of Tammen & Denison, Inc., Chicago, has just announced the substantial expansion of their electronics department.

American electric brakes and clutches for industrial machinery of all types will be exhibited publicly in Great Britain for the first time at the 1953 British Industries Fair, it was announced by Steven P. J. Wood, executive vice-president of the Warner Electric Brake & Clutch Company, Beloit, Wisconsin.

Contracts have recently been awarded for a projected four-lane suspension bridge across the Straits of Mackinac, designed to connect the northern and southern Michigan peninsulas. The bridge, which will provide the only direct highway link from southern Michigan to the vitally important Sault Ste. Marie Locks, was designed by the firm of Dr. D. B. Steinman, world-famed bridge builder and first NSPE president. Dr. Steinman has been serving as consulting engineer to the Mackinac Bridge Authority.